GX200
Service Manual

LG Electronics

Table Of Contents

1. INTRODUCTION

1.1 Purpose

This manual provides information necessary to repair, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part(for example ,persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services.

system users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use .The manufacturer dose not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunications service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent . The user may not make any changes and/or repairs expect as specifically noted in this manual.

Therefore, note that authorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look

slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Devices(ESD),are indicated  **by the sign .**

Following information is ESD handing:

. Service personnel should ground themselves by using a wrist strap when exchange system boards.

. When repairs are made to a system board , they should spread the floor with anti-static mat which is also grounded .

. Use a suitable, grounded soldering iron .

. Keep sensitive parts in these protective packages until these are used.

. When returning system boards or parts like EEPROM to the factory, use the protective packages as described.

2. PERFORMANCE

2.1 H/W Features

Solution	**MT6235B**	Media Tek
Type	Bar type	
Antenna Type	Internal (Quad-Band)	850/900/1800/1900-Benchmark (??)
Main Display	2.0" 176x220 QCIF	LGIT
GPRS	Class 10	
MMS	Yes, 1.1	
Camera	1.3M FF	Abico
Flash Light	Yes, / no Torch	Definition check ??
Battery	1500mAh Li-ion inner pack	Wisepower
Audio player	Yes	MP3/AAC/WAV
FM Receiver	Yes , US/Europe band support	(**87.5~108MHz**) --- reserve embedded FM antenna contact pin on PCB
MPEG4/H.263	Yes (support 3GP)	
H.264	No(no support)	
AAC	Yes	
AAC+	**Yes**	
WMA	**Yes(TBD)**	**LGE will take care of Microsoft License if needed**
FM alarm	**Yes**	
Scheduled FM recording	**Yes**	
MP4 for incoming call/ power on off animation and screen saver	Yes	
Loud Speaker	Yes	
Audio player--real resuming	Yes, for MP3 only	
Video recording	Yes	
Memory Size	**1G + 256Mb**	**NAND Boot**
Internal NAND	**Yes**	**(Maximum is 80MB for user memory)**
Memory Card	Micro SD	**Up to 8GB**
Bluetooth	Yes, version 2.0	W/O EDR.
USB	Yes, USB **2.0 full speed**	
WAP	Yes, 2.0	**Obigo Q03C**
Java	Yes	
SIM Status LED	**YES, Green 1pcs, Red 1pcs (TBD)**	**TBD by UI Scenario**
MPEG4 caller ID	Yes	TBD
OTA	Yes	TBD
In flight mode	Yes	TBD

2.2 S/W Features

2-2-1 System Specification

Item	Target Specification
Form Factor	Bar Type
Size	TBD
Weight	TBD
Battery	3.7V, 1500mAh Li-Ion
Talk Time	**4 hrs 52 min (292** min) @1500mAh @GSM900 PCL 10 **400 min @1500mAh @GSM900 PCL 10**
Standby Time	**428** hrs@1500mAh @ Paging period 9; **500hrs@1500mAh @ Paging period 9**
Antenna	Embedded type
LCD	2.0" 176x220 QCIF
FM	Yes,
Camera	1.3M pixel FF **Landscape mode by default setting**
Back Light	White LED
Keypad Backlight Color	Blue TBD, **White(confirm)**
Vibrator	Yes
Loud Speaker	Yes, **17Φ 1ea, out put : 0.8W over**
Microphone	Yes
Earphone Jack	No
SIM Socket	Yes, 1.8/3.0V
Volume Key	Side key (up/down)
Basic Accessory	Travel Adaptor
	Standard Battery (1500mA, Li-Ion)
	Stereo Headset with button (FM)
	USB Data Cable (Option)

2-2-2 General Features

<table>
<tr><th>Function</th><th>Target Specification</th></tr>
<tr><td>Basic Display</td><td>RSSI ~~(5 Level, 1~5)~~ ~~(7 Level, 0~6)~~ (7 Level, 'no service, 0, 1, 2, 4, 5, 7')</td></tr>
<tr><td></td><td>Battery Indicator (4 Level, 0~3)
Battery Indicator Battery Indicator Voltage
~~4 3~~ ~~3.88 ± 0.03~~
3 -> 2 3.72 ± 0.03
2 -> 1 3.62 ± 0.03
1 -> 0 3.54 ± 0.03

Antenna display (7 level settings and the corresponding RSSI)
<table>
<tr><th>Model</th><th>Antenna Bar</th><th>Display</th><th>Range (dBm)</th><th>Remarks</th></tr>
<tr><td rowspan="7">CDMA
GSM
3G</td><td rowspan="7">7 ea</td><td></td><td>-92 or higher</td><td rowspan="7">If there's a specific requirement by Operator, must follow it.</td></tr>
<tr><td></td><td>-93 ~ -97</td></tr>
<tr><td></td><td>-98 ~ -100</td></tr>
<tr><td></td><td>-101 ~ -103</td></tr>
<tr><td></td><td>-104 ~ -105</td></tr>
<tr><td></td><td>-106 or lower</td></tr>
<tr><td>OFF</td><td>No service</td></tr>
</table>
</td></tr>
<tr><td></td><td>Icons Indicator</td></tr>
<tr><td></td><td>Others reference to "Phone Personalization Setting"</td></tr>
<tr><td>Speech Codec</td><td>FR/EFR/HR/AMR</td></tr>
<tr><td>Keypad</td><td>Number of Keys: 24 Key (include 12 alphanumeric/number keys (0-9,#,*), 4 function keys, 5 way navigation keys, 3 side keys)</td></tr>
<tr><td></td><td>Soft Function Keys : 2</td></tr>
<tr><td></td><td>International Access (+)(long 0)</td></tr>
<tr><td>User Profile (Audio Settings)</td><td>User Selectable and Customizable Profiles (~~7~~ 4 profiles: ~~General, Meeting, Outdoor, Vibrate only, Headset, Silent, Bluetooth~~ Normal, Outdoor, Silent, Flight mode)</td></tr>
<tr><td></td><td>~~Auto-detect and activated profiles (1 profile: Headset)~~</td></tr>
<tr><td></td><td>Key Tone</td></tr>
<tr><td></td><td>Key Tone Volume (~~7 8 Level – 0 ~ 7, 0 for Mute)~~ (6 Level - 0 ~ 5, 0 for Mute)</td></tr>
<tr><td></td><td>Key tone setting ~~(4 sets: Silent, Click, Piano Tone, English/Russia Human voice)~~ (DTMF, English)</td></tr>
<tr><td></td><td>Ring Tone</td></tr>
<tr><td></td><td>Ring Tone Volume (~~7 8 Level – 0 ~ 7, 0 for Mute)~~ (6 Level - 0 ~ 5, 0 for Mute)</td></tr>
<tr><td></td><td>Built-in Ring Tone Pattern: 20</td></tr>
<tr><td></td><td>Customizable Ring Tone Link: 5</td></tr>
<tr><td></td><td>~~Music player volume level: 7 Levels, 0~6, 0 for Mute~~</td></tr>
<tr><td></td><td>~~Intelligent Call Alert~~</td></tr>
<tr><td></td><td>~~Digits To Sound Synthesizing~~</td></tr>
<tr><td></td><td>Alert Type</td></tr>
<tr><td></td><td>~~6~~ 5 Types - Ring, Vibration Only, Vibration and Ring, Ring after vibration, Silent ~~Light Only, Beep Once~~</td></tr>
</table>

	~~**Power On Tone**~~ **Power on/off tones**
	~~Built-in Ring Tone Pattern: 3 (include Silent)~~ Built-in Ring Tone Pattern: 4
	~~**Power Off Tone**~~
	~~Built-in Ring Tone Pattern: 3 (include Silent)~~
	Message Tone
	Built-in Ring Tone Pattern: ~~8 (include Silent)~~ **7**
	Warning Tone
	Built-in Ring Tone Pattern: 1 ~~(Only On/Off operation)~~
	Error Tone
	Built-in Ring Tone Pattern: 1 ~~(Only On/Off operation)~~
	Camp On Tone
	Built-in Ring Tone Pattern: 1 ~~(Only On/Off operation)~~
	Connect Tone
	Built-in Ring Tone Pattern: 1 ~~(Only On/Off operation)~~
	Status LED
	Built-in Lighting Pattern: 2 (None, Pattern 1)
	Charger-in Status LED
	Built-in Lighting Pattern: 2 (None, Pattern 1)
	Answer Mode
	Any Key Answer, **Send Key only**
	Auto (Only available for headset mode while headset plugged in) TBD
Personal Information Management	Calendar - Month view only
	To do list - 6 fields (Date, Start time, End time, Note, Alarm, Repeat)
Tools and Utilities	**Alarm**
	5 sets of Alarm
	4 major fields for each set - On/Off, Time, Repeat type, Audio option
	World Clock
	Cities list: China(52),IND(54),CIS(68) cities
	Daylight saving time support: activated by user selection
	Home city set
	Calculator
	Addition, Subtraction, Multiplication, Division
	Unit Converter~~r~~
	Weight, Length, Currency Converter
	Memo
	To do
	Health
	BMI, Menstrual
Phone Personalization Setting	Greeting Text
	Shortcuts

Setting	Flight Mode
	Time and Date Setting
	Wallpaper
	~~Sceen Saver~~
	Power On Animation
	Power Off Animation
	LCD Backlight
	PLMN/Service Indicator (Display of PLMN Name/Service Provider Name from SIM)
	Date Time Display
	Own Number Display
	Restore Factory Default Setting
Security	Phone Lock SIM/Key Lock
Input Method	**Engine**
	T9
	Support Language
	Depends on customer and market requirement. Total supported languages will be limited to memory condition.
	Predictive word input
Game	**5 Java Games, provided by LGE. TBD**
	Settings: BGM, Sound Effect, Vibration
Anti-theft Mobile Tracker (ATMT)	Provide this feature by following LG spec. (GSM_VVLT 0 5_LMT_20071117_1.ppt)

2-2-3 GSM/GPRS Features

Function	Target Specification
GPRS	GPRS Multi slot Class 10
Data Service	BS 24 - 26 (2400-9600 bit/s), asynchronous, non-transparent, UDI. CSD rate up to 9.6K bit/s
Call History	Last Dialed Number: 40
	Last Received Number: 40
	Last Missed Number: 40
	Scratch Pad Memory (Save an input number in call): 1
Call Cost	Last Call Time
	Total Dialed Call Time
	Total Received Call Time
	Last Call Cost
	Total Cost
	Max Cost
	Price Per Unit
GPRS Counter	Last Sent (unit in Byte)
	Last Received (unit in Byte)
	All Sent (unit in Byte)
	All Received (unit in Byte)
Call Management	Call Swap
	Call Retrieve
	Automatic Redial
	Speed Dialing
	Last Number Redial
	Support 50-digits Dialing Number from Idle, Phonebook in handset, and Call Log **(This feature will not be realized in LG33 project.)** 1. Idle dial screen: OK 2. Phonebook (Phone): OK 3. Phonebook (SIM): Have limitation, depend on SIM card. 4. Call Log: OK 5. SMS: support 20-digit 6. MMS: support 50-digit
Call Related Supplementary Services	Call Hold
	Call Waiting
	Calling Line Identity Presentation
	Calling Line Identity Restriction
	Connected Identification Restriction
	Call Divert All voice Calls
	Call Divert if unreachable
	Call Divert if no answer
	Call Divert if busy
	Call Divert all data calls
	Cancel all divert

	Call Barring All Outgoing Calls
	Call Barring All Outgoing International Calls Call Barring All outgoing International except home
	Call Barring All incoming Calls
	Call Barring All incoming Calls when roaming
	Multi-party Call (up to 7 calls, 5 in conference, 1 on held, 1 waiting)
	Line switching (Line1, Line2) Call reminder (Off, Single, Periodic) ~~Closed User Group~~
Phone Book	Quick Search (Notice: Quick search function only works in Phonebook, SMS and MMS. In other application, this phone supports regular search.)
	Alpha Store and Recall
	Access Phone Book in call
	Copy & Move
	Fixed Dial Number
	Service Dial Number
	Speed Dial Number
	SOS Number
	Entry: **1000 names** (12 fields – Name, Mobile, Home, Company name, Email address, Office number, Fax number, Birthday, Associate Picture, Associate Video, Associate Sound, Caller group) ---- calculate the memory usage (60KB)
	Caller Group-5 caller group- Friends, Family, VIP, Business, Others (6 fields – Name, Ring, Picture, LED pattern, Video, Member list)
	Own Numbers: User can change the own numbers of handset. (Sets of own numbers depends on SIM)
	vCard: (Edit, Send and Receive. 7 fields – Name, Mobile, Home, Company Name, Email Address, Office Number, Fax Number)
	Note: This phone doesn't support phone number search.
Message	**SMS**
	Standard SMS
	SMS Reply Path
	SMS Delivery Report Valid period (1 hour/12 hours/1 day/1 week/Maximum) Message Type (Text, Fax, Page, Email) Message Indication Type refer to GSM 03.40
	Basic text-only SMS as described in 3GPP TS 23.040 R5
	Notice: This phone doesn't support video ring tone via SMS
	SMS Character Sets Support
	GSM7
	UCS-2
	EMS
	EMS Standard as described in 3GPP TS 23.040 R5 excluding WVG
	EMS Text Format
	Text Style: Normal, Bold, Italic, Underlined, Strikethrough

	Text Alignment: Left, Right, Center
	Text Size: Normal, Large, Small
	EMS Image Support
	1-bit small image 16x16 pixels black and white
	1-bit large image 32x32 pixels black and white
	1-bit variable image in single SMS packet
	Extended black and white 1-bit image up to 255x255 pixels
	Extended 6-bit image up to 255x255
	Pre-defined animation
	User-defined small animation 8x8 pixel 4-frame black and white
	User-defined large animation 16x16 pixel 4-frame black and white
	Pre-defined sound
	User-defined i-Melody up to 128 bytes
	LZSS compression algorithm
	Re-use extended object
	Object Distribution
	User Prompt Indicator
	Hyperlink format element
	Extended Object Distribution
	Notice: This mobile doesn't support Nokia smart message format (including WBMP), only support *.ems format" → subject to Nokia smart message license
	EMS Character Sets Support
	GSM7
	UCS-2
	EMS Miscellaneous
	SMS Concatenation (8 Segments for MT/MO)
	SMS Compression
	MMS
	MMS Standard as described in 3GPP TS 23.140 V4.8.0
	Extract media from Message
	Insert Media into message
	OTA provisioning partially support (Network Profile setting
	Auto download mode
	Manual download mode
	Operator can pre-configure the delivery mode
	MMS notification with icon or Pop-up message display)
	MMS Message Format
	MMS SMIL (A subset of SMIL descried in the MMS Conformance Document 1.2) - maximal size for each MMS is limited by300KB
	MMS Character Sets Support
	US-ASCII

	Unicode
	ISO-8859-1
	UTF-16
	UTF-8
	MMS Images Support
	WBMP Wireless bitmap
	GIF87
	GIF89a
	JPEG
	MMS Sound Formats Support
	WAV
	AMR
	MIDI
	MP3
	i-Melody
	MMS Miscellaneous
	Multipart binary MIME
	Storage
	Separated Inbox folder for SMS and MMS
	Separated Outbox folder for SMS and MMS
	Total 300 SMS in the storage of phone plus SIM including Inbox and Outbox (Phone could supports 260sets SMS including Inbox and Outbox. The maximum SMS stored in SIM are 40sets. It means the actual SMS quantities in Inbox and Outbox are among 260 to 300.)[p1]
	Total 100 MMS in the phone storage including Inbox, draft and Outbox Notice: Total MMS count need depends on user memory space.
	Common Operation
	Write Message
	Read Message
	Edit Message (For MMS, Edit only conformance messages, unknown media not supported, unknown SMIL not supported)
	Reply Message
	Send Message
	Delete Message
	Forward Message
	Use Sender's Number
	Message Templates
	Extract media from Message (MMS/EMS)
	Store Media (MMS/EMS)
	Delete Media (MMS/EMS)
Cell Broadcast	Read Cell Broadcast

	Cell Broadcast Mode: Receive On/Off
	Cell Broadcast Message Language
	Channel Setting
Network	Automatic Network Selection
	Manual Network Selection
	Network Service Status
	Preferred Network (User definition)
	GPRS connection mode selection: Always, When Needed
SIM	**Common Operation**
	SIM Application Toolkit (Release 98 Class 2 certified)
	Prepaid SIM operation,
	Security
	PIN
	Personalization (Service provider lock, Network lock)
DTMF	DTMF Signaling
	DTMF Enable & Disable

2-2-4 Multimedia Features

Function	Target Specification
Camera	Image size: 128X160, 160X128, 320X240, 640X480,
	~~Continuous Shot~~ ~~9 shot, 5 shot, 3 shot, OFF~~
	Zoom: 1x ~ 4x
	Image Quality: High, Normal, Low
	White Balance: Auto, Daylight, Tungsten, Fluorescent, Cloud, Incandescence
	Shot: Three Shot Sounds
	EV: -4 ~+4
	Screen Mode: Auto, Night
	Banding: 60Hz/50Hz
	Effect settings: (Total ~~14~~ 13 types) Normal, Grayscale, Sepia, Sepia Green, Sepia Blue, Color Invert, Gray Invert, Blackboard, Whiteboard, ~~Copper Carving~~, Blue Carving, Embossment, Contrast, Sketch

	No. of the Stick Frames: 3 Frame 1, Frame 2, None Stick Frame Only can be used while image size is 128WX160H ~~240WX320H~~
	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Delay timer: Off/ 5/ 10/ 15 Sec
Image Viewer	Thumbnail supported
	Browse Style: List, Matrix
	View
	Forward: To Wallpaper, Phonebook, Picture ID, ~~Screen Saver, Power On Display, Power Off Display,~~ MMS, Bluetooth
	Rename
	Delete
	Delete All
	Sort: By Name, Type, Time, Size~~, None~~
	Storage Selection: Get list from Phone, Memory card (Only available when external memory card supported)
	Image Format Support
	JPEG Baseline
	GIF87a
	GIF89a
	WBMP
	BMP
Music Player	Play
	Pause
	Resume
	Stop
	Next
	Previous
	Fast forward
	Rewind
	Storage Selection: Get list from Phone, Memory card (Only available when external memory card supported)
	Auto-Generate Playlist
	Skin: 2 skins

	Repeat Mode: Off, One Song, All Songs
	Shuffle Play
	Background Play
	Equalizer Setting: 8 sets Normal, Bass, Dance, Classical, Treble, Party, Pop, Rock
	Volume Control: ~~7 level (0 ~ 6, 0 for Mute)~~ 21 level (0~20, 0 for Mute)
	Playlist Edit: Add, Remove, Remove All
	Sound Format Support
	MP3
	AMR
	MIDI
	WAV
	AAC
Video Player	Play
	Pause
	Stop
	Fast forward
	Rewind
	Speed Control: X1, X2, X4, X8, X1/2
	Forward: To Phonebook, ~~Screen Saver~~, Power On Animation, Power Off Animation, MMS, Bluetooth
	Rename
	Delete
	Delete All
	Sort: By Name, Type, Time, Size, ~~None~~
	Storage Selection: Get list from Phone, Memory card
	Volume Control: ~~7 level (0 ~ 6, 0 for Mute)~~ 21 level (0~20, 0 for Mute)
Video Recorder	White Balance: Auto, Daylight, Tungsten, Fluorescent, Cloud, Incandescence
	EV: -4 ~+4
	Night Mode: On/Off

	Banding: 60Hz/50Hz
	Video Quality: Fine, High, Normal, Low
	File Size Limit: No Limit, 95KB, 195KB, 295KB,
	Record Time Limit: No Limit, 15 sec, 30 sec, 60 sec
	Record Audio: On/Off
	Encode Format: MPEG4, H.263
	Effect settings: (Total ~~14~~ 13 types) Normal, Grayscale, Sepia, Sepia Green, Sepia Blue, Color Invert, Gray Invert, Blackboard, Whiteboard, ~~Copper Carving~~, Blue Carving, Embossment, Contrast, Sketch
	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Record
	Pause
	Resume Recording
	Stop
Sound Recorder	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Encode Format: WAV, AMR
	Record
	Pause
	Resume Recording
	Stop
Melody Compose	Edit
	Play
	Save
	Instrument Selection: 10 types Piano, Guitar, Violin, Saxophone, Steel Drums, Flute, Harmonica, Trumpet, Music Box, Xylophone
	Play Speed: Fast, Normal, Slow
	[Notice] Melody composer only support one instrument in one imelody file, so the last chosen instrument will be used to play this imelody file

FM Radio	Frequencies: 87.5 ~ 108.0 Skin: 2 skins
	User definable Preset Channel List
	Channel Auto Search
	Background Play
	Record
	Record Format: AMR, WAV
	Record Storage: Phone, Memory Card (Only available when external memory card supported)
	Preset Channel List generated by auto search
JAVA	MIDP 2.0
	CLDC 1.1
	Memory Limit ~~1MB~~ 2MB Support JSR 139,118,120,135,185
	QQ, MSN, Yahoo, Google (Java Application)
	Support Text viewer (txt only)

2-2-5 Connectivity Features

Function	Target Specification
WAP	WAP 2.0 Spec.
	WAP Push OTA/Message
	WAP Provisioning Service
	CSD/GPRS data connection
	Bookmark
	Wireless Telephony Application (WTA) support: Only Public WTA support, supported functions listing below - * Make a telephone call * Send a string of DTMF tones over an established voice connection * Add an entry to the telephone book of the device
	Support OTA push and push message
	OTA Provisioning & OTA download
	Supports WML, WCSS, XHTML mp
Bluetooth	Version 2.0 (w/o EDR)
	Profile: GAP,SDAP,DUN,SPP,HSP,HFP,OPP,FTP,A2DP, AVRCP,**BPP**
USB	Mass Storage Device *2.0*
	Virtual COM

3. TECHNICAL BRIEF

3.1 Digital Main Processor

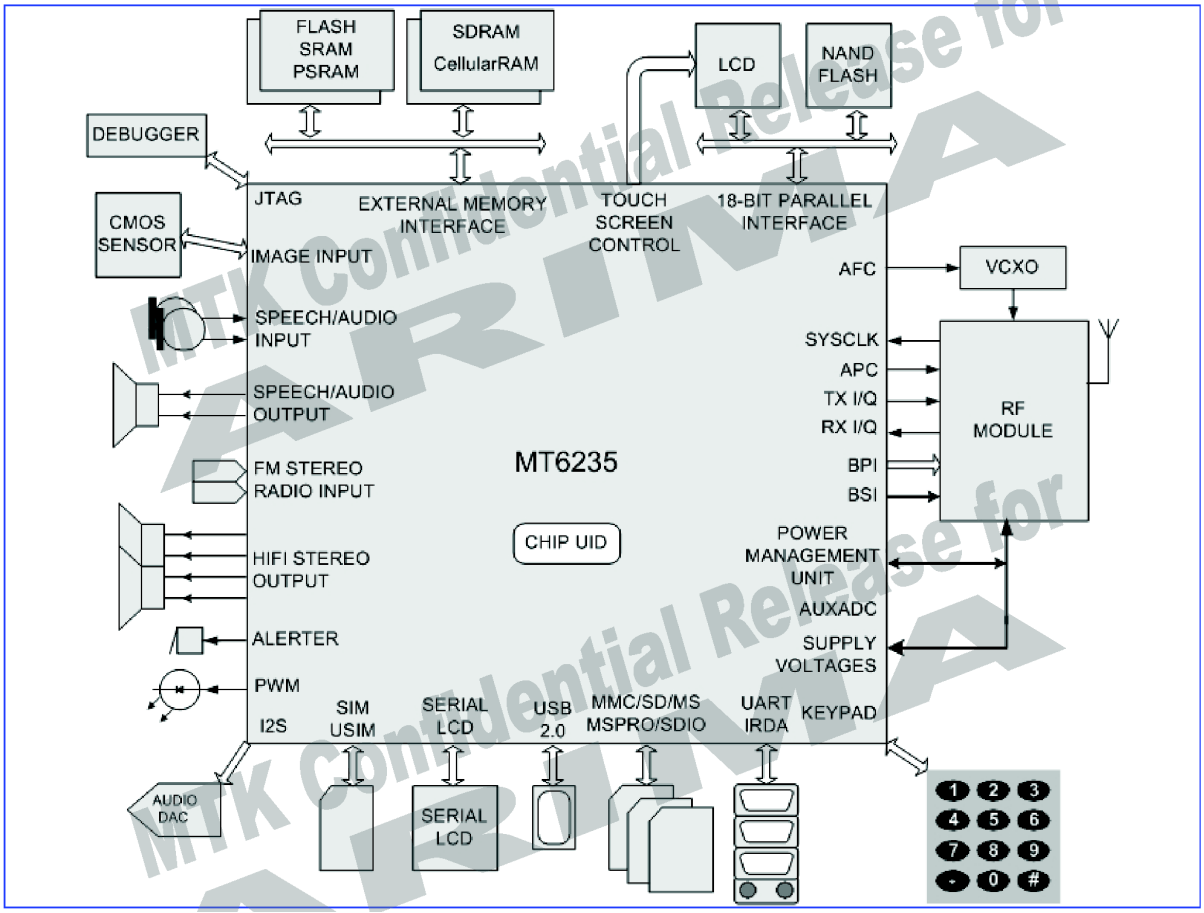

Figure.3-1-1 MT6235 FUNCTIONAL BLOCK DIAGRAM

3.1.1 System Overview

MT6235 is a highly-integrated and extremely powerful single-chip solution for GSM/GPRS/EDGE mobile phones.

Based on the 32-bit ARM926EJ-STM RISC processor, MT6235's superb processing power, along with high bandwidth architecture and dedicated hardware support, provides an unprecedented platform for high performance GPRS/EDGE Class 12 MODEM application. Overall, MT6235 presents a revolutionary platform for mobile devices.

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Platform

MT6235 is capable of running the ARM926EJ-STM RISC processor at up to 208 MHz, thus providing fast data processing capabilities. In addition to the high clock frequency, separate CODE and DATA caches are also included to further improve the overall system efficiency.

For large amounts of data transfer, high performance DMA (Direct Memory Access) with hardware flow control is implemented, which greatly enhances the data movement speed while reducing MCU processing load.

Targeted as a high performance platform for mobile applications, hardware flash content protection is also provided to prevent unauthorized porting of the software load to protect the manufacturer's development investment.

Memory

To provide the greatest capacity for expansion and maximum bandwidth for data intensive applications such as multimedia features, MT6235 supports up to 4 external state-of-the-art devices through its 8/16-bit host interface.High performance devices such as Mobile SDRAM and Cellular RAM are supported for maximum bandwidth.Traditional devices such as burst/page mode flash, page mode SRAM, and Pseudo SRAM are also supported. For greatest compatibility, the memory interface can also be used to connect to legacy devices such as Color/Parallel LCD, and multi-media companion chips are all supported through this interface. To minimize power consumption and ensure low noise, this interface is designed for flexible I/O voltage and allows lowering of the supply voltage down to 1.8V. The driving strength is configurable for signal integrity adjustment.

Multi-media

The MT6235 multi-media subsystem provides a connection to a CMOS image sensor and supports a resolution up to 2.0 Mpixels. With its high performance application platform, MT6235 allows efficient processing of image and video data.

In addition to image and video features, MT6235 utilizes high resolution DAC, digital audio, and audio synthesis technology to provide superior audio features for all future multi-media needs.

Connectivity and Storage

To take advantage of its incredible multimedia strengths, MT6235 incorporates myriads of advanced connectivity and storage options for data storage and communication. MT6235 supports UART, Fast IrDA, USB 2.0, SDIO,Bluetooth, Touch Screen Controller, WIFI Interface, and MMC/SD/MS/MS Pro storage systems. These interfaces provide MT6235 users with the highest degree of flexibility in implementing solutions suitable for the targeted application.

To achieve a complete user interface, MT6235 also brings together all the necessary peripheral blocks for a multi-media GSM/GPRS/EDGE phone. The peripheral blocks include the Keypad Scanner with the capability to detect multiple key presses, SIM Controller, Alerter, Real Time Clock, PWM, Serial LCD Controller, and General Purpose Programmable I/Os.

Furthermore, to provide much better configurability and bandwidth for multi-media products, an additional 18-bit parallel interface is incorporated. This interface enables connection to LCD panels as well as NAND flash devices for additional multi-media data storage.

Audio

Using a highly integrated mixed-signal Audio Front-End, the MT6235 architecture allows for easy audio interfacing with direct connection to the audio transducers. The audio interface integrates D/A and A/D Converters for Voice band, as well as high resolution Stereo D/A Converters for Audio band. In addition, MT6235 also provides Stereo Input and Analog MUX.

MT6235 supports AMR codec to adaptively optimize speech and audio quality. Moreover, HE-AAC codec is implemented to deliver CD-quality audio at low bit rates.

On the whole, MT6235's audio features provide a rich solution for multi-media applications.

Radio

MT6235 integrates a mixed-signal baseband front-end in order to provide a well-organized radio interface with flexibility for efficient customization. The front-end contains gain and offset calibration mechanisms, and filters with programmable coefficients for comprehensive compatibility control on RF modules. This approach allows the usage of a high resolution D/A Converter for controlling VCXO or crystal, reducing the need for an expensive TCVCXO. MT6235 achieves great MODEM performance by utilizing a 14-bit high resolution A/D Converter in the RF downlink path. Furthermore, to reduce the need for extra external current-driving component, the driving strength of some BPI outputs is designed to be configurable.

Debug Function

The JTAG interface enables in-circuit debugging of the software program with the ARM926EJ-S core. With this standardized debugging interface, MT6235 provides developers with a wide set of options in choosing ARM development kits from different third party vendors.

Power Management

The MT6235 offers various low-power features to help reduce system power consumption. These features include a Pause Mode of 32 KHz clocking in Standby State, Power Down Mode for individual peripherals, and Processor Sleep Mode. MT6235 is also fabricated in an advanced low leakage CMOS process, hence providing an overall ultra low leakage solution.

Package

The MT6235 device is offered in a 13mm×13mm, 362-ball, 0.5 mm pitch, TFBGA package.

3.1.2 Platform Features

General

Integrated voice-band, audio-band and base-band analog front ends
TFBGA 13mm×13mm, 362-ball, 0.5 mm pitch package

MCU Subsystem

ARM926EJ-S 32-bit RISC processor
High performance multi-layer AMBA bus
Java hardware acceleration for fast Java-based games and applets
Operating frequency: 26/52/104/208 MHz
Dedicated DMA bus
14 DMA channels
512K bits on-chip SRAM
384K bits Instruction-TCM
640K bits Data-TCM

128K bits Instruction-Cache
128K bits Data-Cache
On-chip boot ROM for Factory Flash Programming
Watchdog timer for system crash recovery
3 sets of General Purpose Timer
Circuit Switch Data coprocessor
Division coprocessor
PPP Framer coprocessor

External Memory Interface

Supports up to 4 external memory devices
Supports 8-bit or 16-bit memory components with maximum size of up to 128M Bytes each
Supports Mobile SDRAM and Cellular RAM
Supports Flash and SRAM/PSRAM with page mode or burst mode
Industry standard Parallel LCD interface
Supports multi-media companion chips with 8/16 bits data width
Flexible I/O voltage of 1.8V ~ 2.8V for memory interface
Configurable driving strength for memory interface

User Interfaces

8-row × 8-column keypad controller with hardware scanner
Supports multiple key presses for gaming
SIM/USIM controller with hardware T=0/T=1 protocol control
Real Time Clock (RTC) operating with a separate power supply
General Purpose I/Os (GPIOs)
4 sets of Pulse Width Modulation (PWM) output
Alerter output with Enhanced PWM or PDM
8 external interrupt lines

Security

Supports security key and 126 bit chip unique ID

Connectivity

3 UARTs with hardware flow control and speeds up to 921600 bps
IrDA modulator/demodulator with hardware framer. Supports SIR/MIR/FIR operating speeds.
USB 2.0 capability
Multi Media Card, Secure Digital Memory Card, Memory Stick, Memory Stick Pro host controller with flexible I/O voltage power
Supports SDIO interface for SDIO peripherals as well as WIFI connectivity
DAI/PCM and I2S interface for Audio application

Power Management

Power Down Mode for analog and digital circuits
Processor Sleep Mode
Pause Mode of 32 KHz clocking in Standby State
4-channel Auxiliary 10-bit A/D Converter for charger and battery monitoring and photo sensing

Test and Debug

Built-in digital and analog loop back modes for both Audio and Baseband Front-End
DAI port complying with GSM Rec.11.10
JTAG port for debugging embedded MCU

3.1.3 MODEM Features

Radio Interface and Baseband Front End

GMSK modulator with analog I and Q channel outputs

10-bit D/A Converter for uplink baseband I and Q signals
14-bit high resolution A/D Converter for downlink baseband I and Q signals
Calibration mechanism of offset and gain mismatch for baseband A/D Converter and D/A Converter
10-bit D/A Converter for Automatic Power Control
13-bit high resolution D/A Converter for Automatic Frequency Control
Programmable Radio RX filter
2 channels Baseband Serial Interface (BSI) with 3-wire control
Bi-directional BSI interface. RF chip register read access with 3-wire or 4-wire interface.
10-Pin Baseband Parallel Interface (BPI) with programmable driving strength
Multi-band support

Voice and Modem CODEC

Dial tone generation
Voice memo
Noise reduction
Echo suppression
Advanced sidetone Oscillation Reduction
Digital sidetone generator with programmable gain
Two programmable acoustic compensation filters
GSM/GPRS quad vocoders for adaptive multirate (AMR), enhanced full rate (EFR), full rate (FR) and half rate (HR)
GSM channel coding, equalization and A5/1, A5/2 and A5/3 ciphering
GPRS GEA1, GEA2 and GEA3 ciphering
Programmable GSM/GPRS/EDGE modem
Packet Switched Data with CS1/CS2/CS3/CS4 coding schemes
GSM Circuit Switch Data
GPRS/EDGE Class 12

Voice Interface and Voice Front End

Two microphone inputs sharing one low noise amplifier with programmable gain and automatic gain control (AGC) mechanisms
Voice power amplifier with programmable gain
2nd order Sigma-Delta A/D Converter for voice uplink path
D/A Converter for voice downlink path
Supports half-duplex hands-free operation
Compliant with GSM 03.50

3.1.4 Multi-Media Features

LCD/NAND Flash Interface

Dedicated Parallel Interface supports 3 external devices with 8-/16-bit NAND flash interface, 8-/9-/16-/18-bit Parallel interface, and Serial interface for LCM
Built-in NAND Flash Controller with 1-bit ECC for mass storage

LCD Controller

Supports simultaneous connection to up to 3 parallel LCD and 2 serial LCD modules
Supports LCM format: RGB332, RGB444, RGB565, RGB666, RGB888
Supports LCD module with maximum resolution up to 800x600 at 24bpp
Per pixel alpha channel
True color engine
Supports hardware display rotation
Capable of combining display memories with up to 6 blending layers

Image Signal Processor

8 bit YUV format image input
Capable of processing image of size up to 2.0 M pixels
IEEE Std 1180-1990 IDCT standards compliance
Supports progressive image processing to minimize storage space requirement
Supports reload-able DMA for VLD stream

Image Data Processing

Supports Digital Zoom
Supports RGB888/565, YUV444 image processing
High throughput hardware scaler. Capable of tailoring an image to an arbitrary size.
Horizontal scaling in averaging method
Vertical scaling in bilinear method
YUV and RGB color space conversion
Boundary padding

2D Accelerator

Supports 32-bpp ARGB8888, 24-bpp RGB888, 16-bpp RGB565, and 8-bpp index color modes
Supports SVG Tiny
Rectangle gradient fill
BitBlt: multi-BitBlt with 7 rotation, 16 binary ROP
Alpha blending with 7 rotation
Line drawing: normal line, dotted line, anti-aliasing
Circle drawing
Bezier curve drawing
Triangle flat fill
Font caching: normal font, italic font
Command queue with max depth of 2047

Audio CODEC

Supports HE-AAC codec decode
Supports AAC codec decode
Wavetable synthesis with up to 64 tones
Advanced wavetable synthesizer capable of generating simulated stereo
Wavetable including GM full set of 128 instruments and 47 sets of percussions
PCM Playback and Record
Digital Audio Playback

Audio Interface and Audio Front End

Supports I2S interface
High resolution D/A Converters for Stereo Audio
Stereo analog input for stereo audio source
Analog multiplexer for stereo audio
Stereo to mono conversion

3.1.5 General Description

Figure 3-1-2 depicts the block diagram of MT6235. Based on a dual-processor architecture, MT6235 integrates both an ARM926EJ-S core and a digital signal processor core. ARM926EJ-S is the main processor responsible for running high-level GSM/GPRS protocol software as well as multi-media applications. The digital signal processor manages the low-level MODEM as well as advanced audio functions. Except for a few mixed-signal circuitries, the other building blocks in MT6235 are connected to either the microcontroller or the digital

signal processor.

MT6235consists of the following subsystems:
Microcontroller Unit (MCU) Subsystem: includes an ARM926EJ-S RISC processor and its accompanying memory management and interrupt handling logics;
Digital Signal Processor (DSP) Subsystem: includes a DSP and its accompanying memory, memory controller, and interrupt controller;
MCU/DSP Interface: the junction at which the MCU and the DSP exchange hardware and software information;
Microcontroller Peripherals: includes all user interface modules and RF control interface modules;
Microcontroller Coprocessors: runs computing-intensive processes in place of the Microcontroller;
DSP Peripherals: hardware accelerators for GSM/GPRS/EDGE channel codec;
Multi-media Subsystem: integrates several advanced accelerators to support multi-media applications;
Voice Front End: the data path for converting analog speech to and from digital speech;
Audio Front End: the data path for converting stereo audio from an audio source;
Baseband Front End: the data path for converting a digital signal to and from an analog signal from the RF modules;
Timing Generator: generates the control signals related to the TDMA frame timing; and,
Power, Reset and Clock Subsystem: manages the power, reset, and clock distribution inside MT6235.

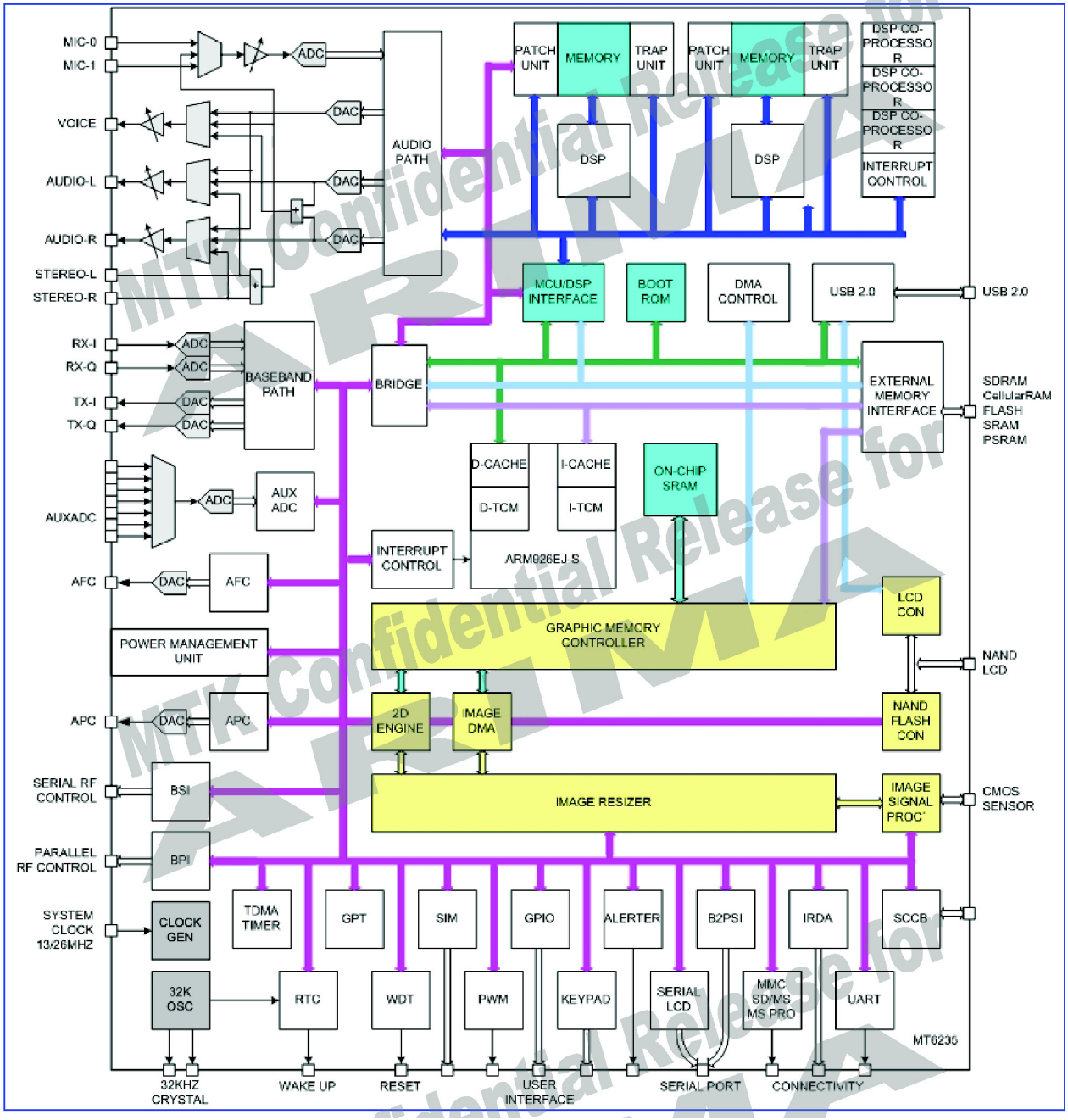


Figure.3-1-2 MT6235 BLOCK DIAGRAM

3.2 Power Amplifier Module (SKY77531)

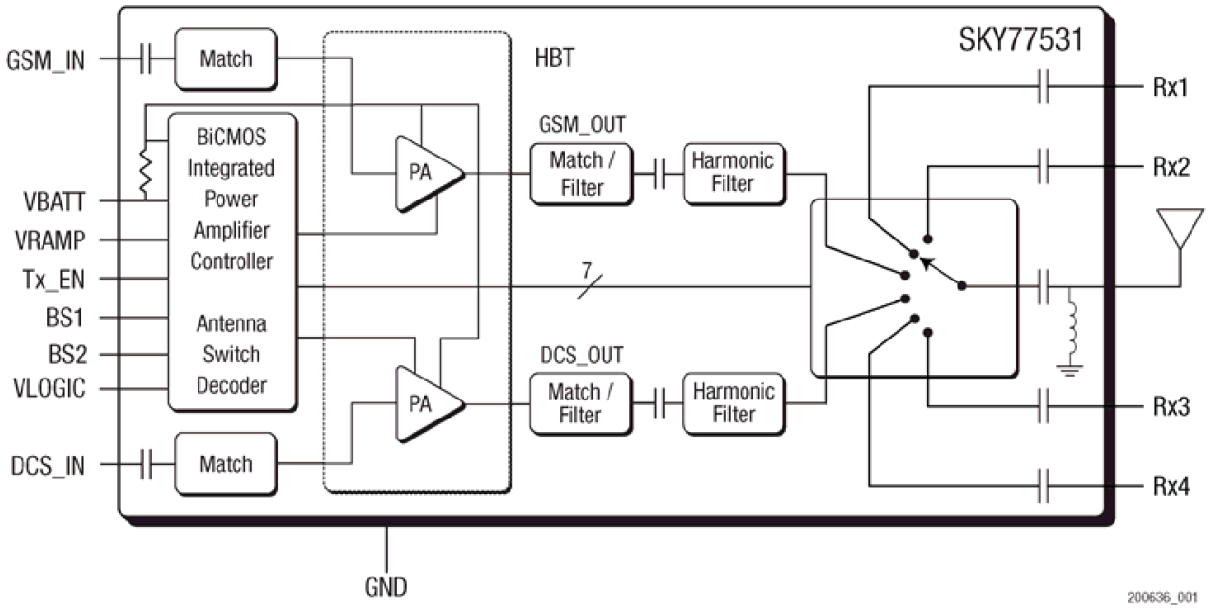


Figure.3-2-1 SKY77531 FUNCTIONAL BLOCK DIAGRAM

The SKY77531 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control (iPAC.) for quad-band cellular handsets comprising GSM850/900 and DCS1800/PCS1900 operation. Designed in a low profile, compact form factor, the SKY77531 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedancematching circuitry for 50 Ω input and output impedances, Tx harmonics filtering, high linearity and a low insertion loss PHEMT RF switch, and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM850/900 bands and the other PA block supports the DCS1800/PCS1900 bands. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the four receive pads are connected to the antenna pad through a PHEMT RF switch. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive are performed using four external control pads. Refer to the block diagram in Figure 1 below. The band select pads, BS1 and BS2, select GSM850, GSM900, DCS, and PCS modes of operation. Transmit enable Tx_EN controls receive or transmit mode of the RF switch (Tx = logic 1). Proper timing between transmit enable Tx_EN and Analog Power Control VRAMP allows for high isolation between the antenna and Tx – VCO while the VCO is being tuned prior to the transmit burst.

The SKY77531 is compatible with logic levels from 1.2 V to VCC for BS1, BS2, and Tx_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

3.3 Transceiver Module (AD6548)

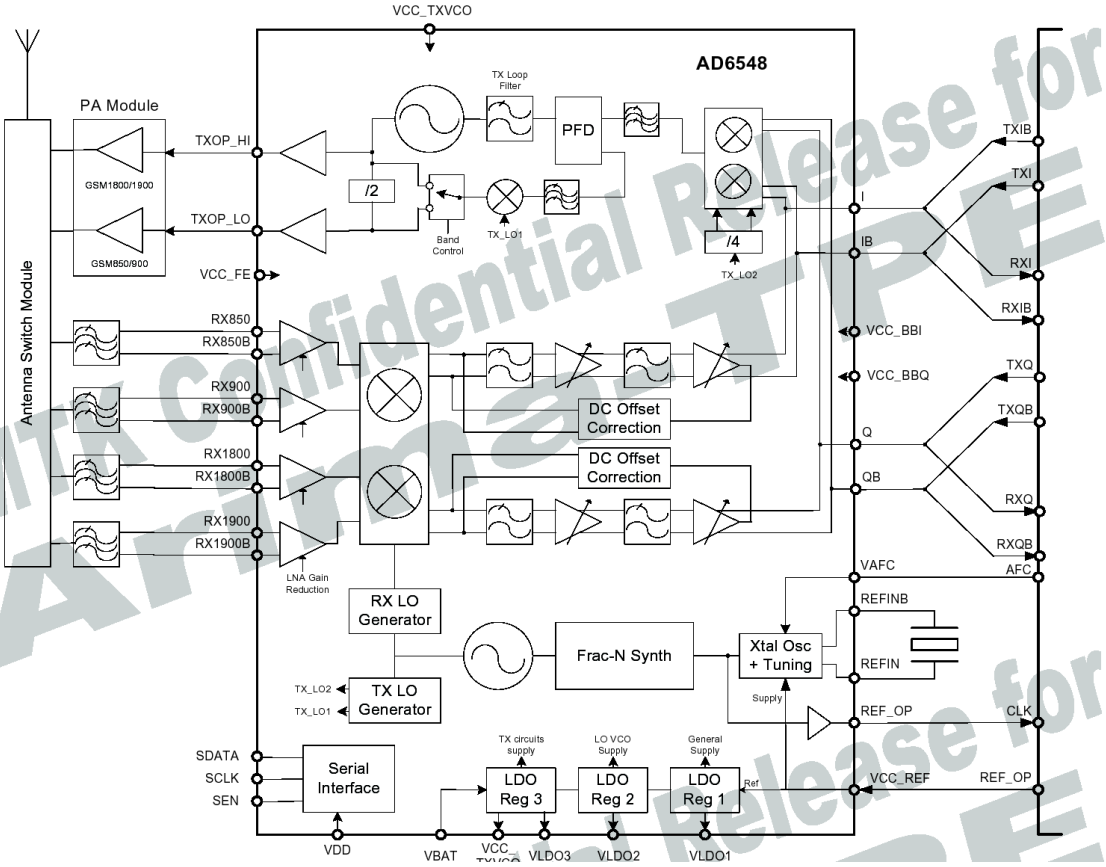


Figure.3-3-1 AD6548 FUNCTIONAL BLOCK DIAGRAM

3.3.1 General Descriptions

The AD6548/9 provides a highly integrated direct conversion radio solution that combines, on a single chip, all radio and power management functions necessary to build the most compact GSM radio solution possible. The only external components required for a complete radio design are the Rx SAWs, PA, Switchplexer and a few passives enabling an extremely small
cost effective GSM Radio solution.

The AD6548/9 uses the industry proven direct conversion receiver architecture of the OthelloTM family. For Quad band applications the front end features four fully integrated programmable gain differential LNAs. The RF is then downconverted by quadrature mixers and then fed to the baseband programmable-gain amplifiers and active filters for channel selection. The Receiver output pins can be directly connected to the baseband analog processor. The Receive path features automatic calibration and tracking to remove DC offsets.

The transmitter features a translation-loop architecture for directly modulating baseband signals onto the integrated TX VCO. The translation-loop modulator and TX VCO are extremely low noise removing the need for external SAW filters prior to the PA.

The AD6548/9 uses a single integrated LO VCO for both the receive and the transmit circuits. The synthesizer lock times are optimized for GPRS applications up to and including class 12.
To dramatically reduce the BOM both TX Translational loop and main PLL Loop Filters are fully integrated into the device.

AD6548 incorporates a complete reference crystal calibration system. This allows the external VCTCXO to be replaced with a low cost crystal. No other external components are required. The AD6549 uses the traditional VCTCXO reference source.

The AD6548/9 also contains on-chip low dropout voltage regulators (LDOs) to deliver regulated supply voltages to the functions on chip, with a battery input voltage of between 2.9V and 5.5V. Comprehensive power down options are included to minimize power consumption in normal use.

A standard 3 wire serial interface is used to program the IC. The interface features low-voltage digital interface buffers compatible with logic levels from 1.6V to 3.0V.
The AD6548/9 is packaged in a 5mm × 5mm , 32-lead LFCSP package.

ORDERING GUIDE	Model Temperature Range	Package
AD6548BCPZ	-20℃ to +85℃	LFCSP-32
AD6549BCPZ	-20℃ to +85℃	LFCSP-32

3.3.2 Features

Fully Integrated GSM Transceiver including

Direct Conversion Receiver
- 4 Differential LNAs
- Integrated Active RX Channel Select Filters
- Programmable Gain Baseband Amplifiers

Translation Loop Direct VCO Modulator
- Integrated TX VCO and tank
- External TX filters eliminated
- Integrated Loop filter components

High performance multi band PLL system
- Fast Fractional-N Synthesizer
- Integrated Local Oscillator VCO
- Fully Integrated Loop filters
- Crystal Reference Oscillator & Tuning System (AD6548)

Power Management
- Integrated LDOs allow direct battery supply connection

Small footprint
- 32-Lead 5 X 5 mm Chipscale Package

APPLICATIONS

Dual, Triple and Quad Band Radios
- GSM850, E-GSM 900, DCS1800 and PCS1900
- GPRS to Class 12- EDGE RX

3.3.3 Pin Descriptions

No	Name	Description	No	Name	Description
1	VCC_FE	Front end supply (IP)[3]	17	VCC_REF	Reference Oscillator Supply (IP)
2	I	I baseband input/output	18	VAFC	AD6548 Crystal Freq control (IP) AD6549: Connect to VCC_REF
3	IB	I baseband input/output	19	REFINB	Crystal / VCTCXO Connection
4	VCC_BBI	Baseband I, TX path supply (IP)[3]	20	REFIN	Crystal Connection
5	SDATA	Serial port data	21	REF_OP	Reference Frequency Output
6	SCLK	Serial port clock	22	QB	Q baseband input/output
7	SEN	Serial port enable	23	Q	Q baseband input/output
8	N/C	Not connected	24	VCC_BBQ	Baseband Q supply (IP)[3]
9	VLDO3	TX LDO Output[1]	25	RX1900B	PCS 1900 LNA input
10	TXOP_LO	Transmit O/P (850/900MHz)	26	RX1900	PCS 1900 LNA input
11	TXOP_HI	Transmit O/P (1800/1900MHz)	27	RX1800B	DCS 1800 LNA input
12	VCC_TXVCO	TX VCO supply (1)	28	RX1800	DCS 1800 LNA input
13	VDD	Serial interface supply	29	RX900B	E-GSM 900 LNA input
14	VBAT	Battery I/P for LDO reg's	30	RX900	E-GSM 900 LNA input
15	VLDO1	LDO regulator Output[2]	31	RX850B	GSM 850 LNA input
16	VLDO2	LO VCO Supply[1]	32	RX850	GSM 850 LNA input

3.4 Bluetooth Module (MT6601)

The internal connection of the major physical blocks and their associated external interfaces are shown in **Figure 3-4-1**.

The transceiver section of MT6601 incorporates the complete receive and transmit paths, including PLL, VCO, LNA, PA, modulator, demodulator.

The baseband signal processor incorporates hardware engines performing frequency hopping, error correcting, whitening, encrypting, data packet assembling and de-assembly to offload the embedded ARM7.

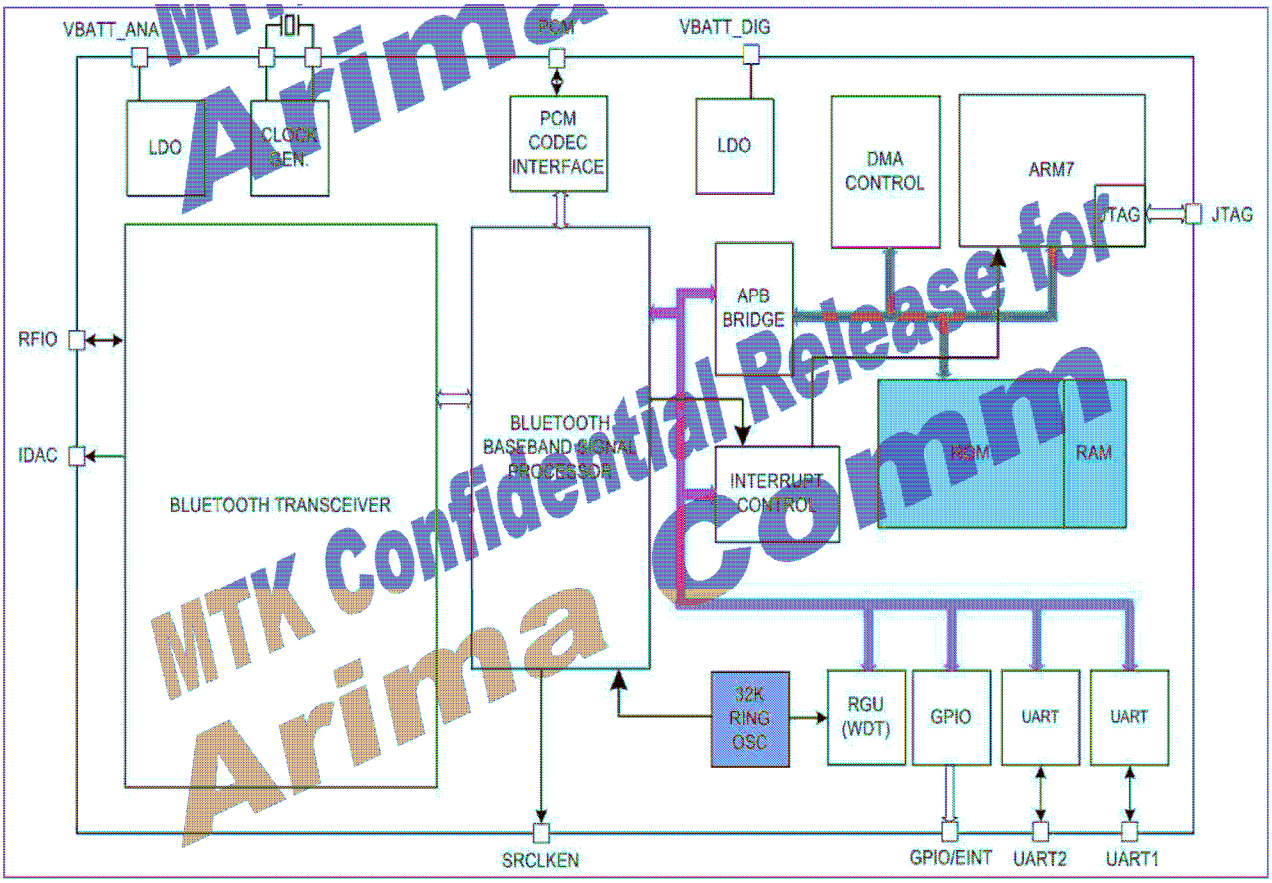


Figure.3-4-1 MT6601 FUNCTIONAL BLOCK DIAGRAM

3.4.1 General description

Bluetooth is a low-cost wireless technology used to provide “ad hoc” networking between versatile portable devices such as cell phones, PDAs, digital cameras, headsets, and more.

MT6601 is a highly integrated Bluetooth platform IC. It includes powerful baseband processing capabilities with rich features and a high performance transceiver, all in a compact single package.

3.4.2 Features

Radio features

Fully compliant with Bluetooth specification 1.2.

Low out-of-band spurious emissions supports simultaneous operation with GPS, GSM/GPRS worldwide radio systems.

Direct conversion architecture with no external channel filter or VCO resonator components.

Fully integrated RF front-end matching circuits eliminates external balance and T/R switch.

Transmitter features

Meets class 2 and class 3 transmitting requirement.

Support Class 1 operation with external PA.

Receiver features

-85dBm sensitivity with excellent interference rejection performance.

Hardware AGC dynamically adjusts receiver performance in changing environments.

Baseband features

eSCO support.

3 simultaneous SCO channels.

Scatternet support.

Sniff mode, hold mode, and part mode support.

AFH and PTA collaborative support for WLAN/BT coexistence.

Lower power mode and deep sleep mode enables ultra low power consumption

Platform features

On-chip voltage regulation simplifies voltage input requirements.

Low power consumption in active and standby mode.

Wide ranges of crystal and external reference clock support.

PCM interface and built-in transcoders for A-law, _-law and linear voice.

Built-in hardware modem engine for access code correlation, header error correction, forward error correction,CRC, whitening, and encryption.

High speed UART support.

Built-in RAM and ROM with patch system.

Software features

Supports standard HCI interface.

3.4.3 Applications

MT6601 is designed to provide direct interface with existing handset chip as shown in **Figure 3-4-2.**

The PCM interface provides master or slave mode operation with programmable data frequency to connect to the voice channel with the GSM baseband. The UART interface supports hardware flow control as well as high-speed baud rate. The PTA interface accommodates different arbitration scheme enabling efficient channel utilization in co-existence environment.

The external reference clock interface supports wide ranges of frequencies that the mobile phones use.

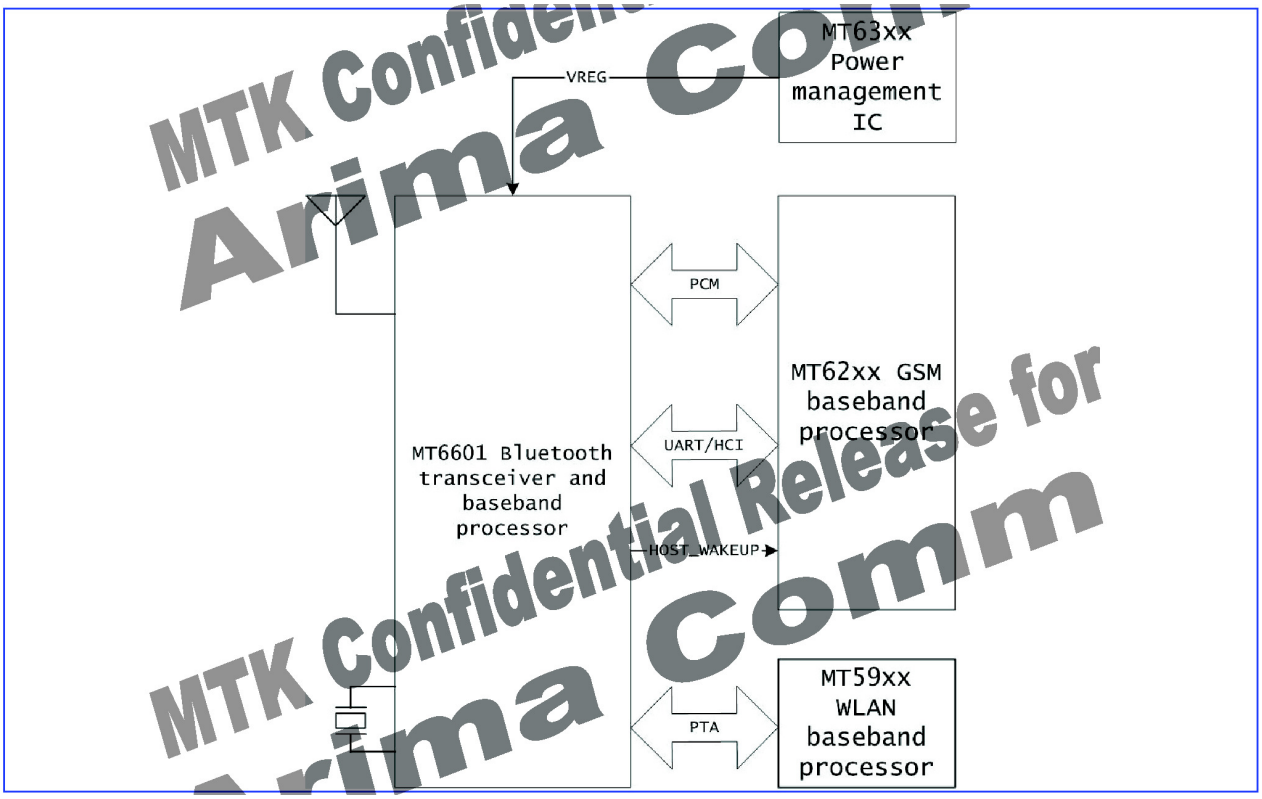


Figure.3-4-2 Mobile phone application.

3.5 Memory Module (K5D12571CA-D090)

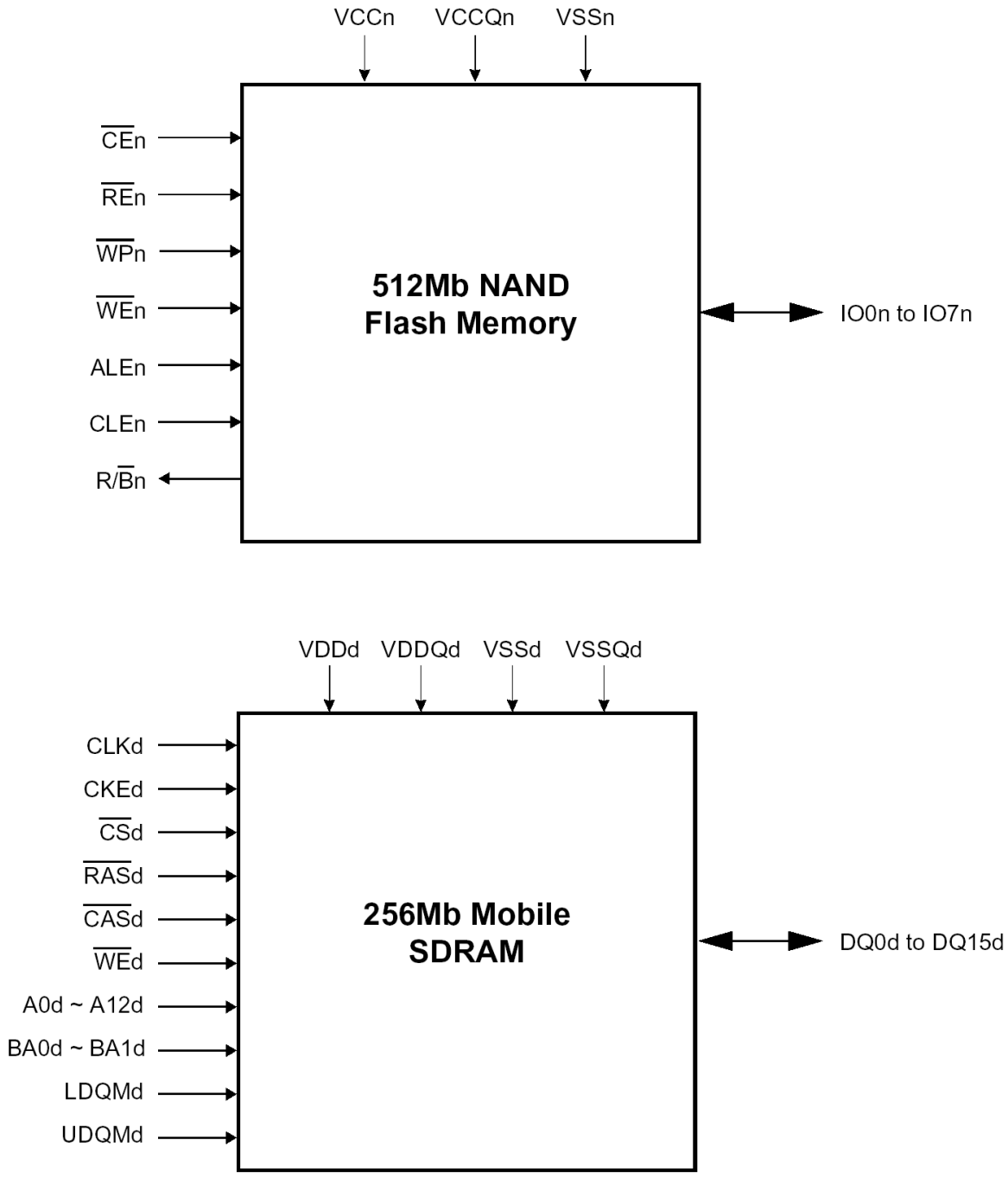


Figure.3-5-1 K5D12571CA-D090 FUNCTIONAL BLOCK DIAGRAM

3.5.1 FEATURES

<Common>

- Operating Temperature : -25°C ~ 85°C
- Package : 107-ball FBGA Type - 10.5x13x1.4mmt, 0.80mm pitch

<NAND Flash>

- Voltage Supply : 2.5V ~ 2.9V
- Organization
  - Memory Cell Array : (64M + 2M) x 8bits
  - Data Register : (512 + 16) x 8bits
- Automatic Program and Erase
  - Page Program : (512 + 16) x 8bits
  - Block Erase : (16K + 512)Bytes
- Page Read Operation
  - Page Size : (512 + 16)Bytes
  - Random Access : 15 μs(Max.)
  - Serial Page Access : 42ns(Min.)
- Fast Write Cycle Time
  - Program time : 200 μs(Typ.)
  - Block Erase Time : 2ms(Typ.)
- Command/Address/Data Multiplexed I/O Port
- Hardware Data Protection
  - Program/Erase Lockout During Power Transitions
- Reliable CMOS Floating-Gate Technology
  - Endurance : 100K Program/Erase Cycles (with 1bit/512Byte ECC)
  - Data Retention : 10 Years
- Command Register Operation
- Unique ID for Copyright Protection

<Mobile SDRAM>

• VDD/VDDQ = 1.8V/1.8V
• LVCMOS compatible with multiplexed address.
• Four banks operation.
• MRS cycle with address key programs.
  - CAS latency (1, 2 & 3).
  - Burst length (1, 2, 4, 8 & Full page).
  - Burst type (Sequential & Interleave).
• EMRS cycle with address key programs.
• All inputs are sampled at the positive going edge of the system clock.
• Burst read single-bit write operation.
• Special Function Support.
  - PASR (Partial Array Self Refresh).
  - Internal TCSR (Temperature Compensated Self Refresh)
  - DS (Driver Strength)
• DQM for masking.
• Auto refresh.
64ms refresh period (8K cycle).

Address configuration

Organization	Bank	Row	Column
16M x 16	BA0,BA1	A0 - A12	A0 - A8

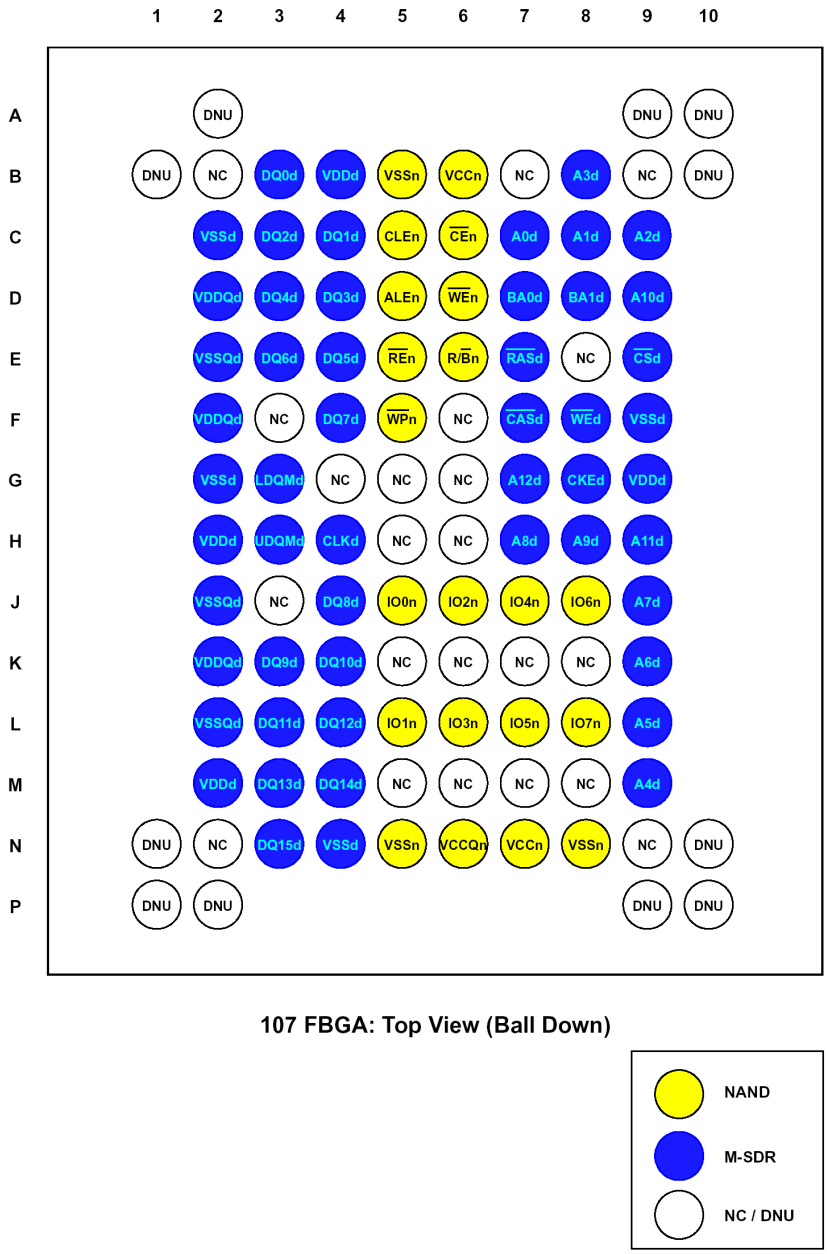
3.5.2 GENERAL DESCRIPTION

The K5D12571CA is a Multi Chip Package Memory which combines 512Mbit NAND Flash Memory and 256Mbit Mobile Synchronous Dynamic RAM.

Offered in 64Mx8bits, the NAND Flash is 512Mbit with spare 16Mbit capacity. The device is offered in 2.7V Vcc. Its NAND cell provides the most cost-effective solutIon for the solid state mass storage market. A program operation can be performed in typical 200 μs on the 528-bytes and an erase operation can be performed in typical 2ms on a 16K-bytes block. Data in the page can be read out at 42ns cycle time per byte. The I/O pins serve as the ports for address and data input/output as well as command input. The on-chip write control automates all program and erase functions including pulse repetition, where required, and internal verification and margining of data. Even the write-intensive systems can take advantage of the device ´s extended reliability of 100K program/erase cycles by providing ECC(Error Correcting Code) with real time mapping-out algorithm. The device is an optimum solution for large nonvolatile storage applications such as solid state file storage and other portable applications requiring non-volatility.

The 256Mb Mobile SDRAM is 268,435,456 bits synchronous high data rate Dynamic RAM organized as 4 x 4,194,304 words by 16 bits, fabricated with SAMSUNG's high performance CMOS technology. Synchronous design allows precise cycle control with the use of system clock and I/O transactions are possible on every clock cycle. Range of operating frequencies, programmable burst lengths and programmable latencies allow the same device to be useful for a variety of high bandwidth and high performance memory system applications.

The K5D12571CA is suitable for use in data memory of mobile communication system to reduce not only mount area but also power consumption. This device is available in 107-ball FBGA Type.



107 FBGA: Top View (Ball Down)

Figure.3-5-2 K5D12571CA-D090 PIN CONFIGURATION

PIN DESCRIPTION

Pin Name	Pin Function(Mobile SDRAM)
CLKd	System Clock
CKEd	Clock Enable
$\overline{CS}$d	Chip Select
$\overline{RAS}$d	Row Address Strobe
$\overline{CAS}$d	Column Address Strobe
$\overline{WE}$d	Write Enable
A0d ~ A12d	Address Input
BA0d ~ BA1d	Bank Address Input
LDQMd	Lower Input/Output Data Mask
UDQMd	Upper Input/Output Data Mask
DQ0d ~ DQ15d	Data Input/Output
VDDd	Power Supply
VDDQd	Data Out Power
VSSd	Ground
VSSQd	DQ Ground

Pin Name	Pin Function(NAND Flash)
$\overline{CE}$n	Chip Enable
$\overline{RE}$n	Read Enable
$\overline{WP}$n	Write Protection
$\overline{WE}$n	Write Enable
ALEn	Address Latch Enable
CLEn	Command Latch Enable
R/$\overline{B}$n	Ready/Busy Output
IO0n ~ IO7n	Data Input/Output
VCCn	Power Supply
VCCQn	Data Out Power
VSSn	Ground

Pin Name	Pin Function
NC	No Connection
DNU	Do Not Use

Figure.3-5-3 K5D12571CA-D090 PIN Description

3.6 FM Radio Module (Si4708)

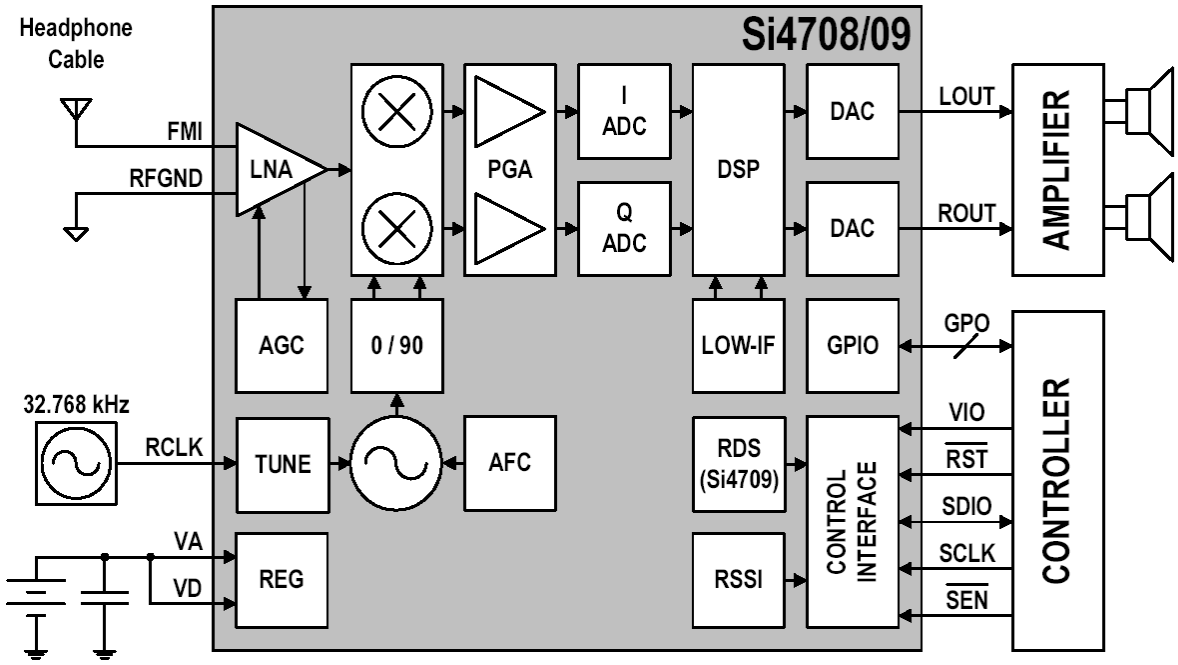


Figure. 3-6-1 Si4708 FM Receiver Block Diagram

The Si4708/09 extends Silicon Laboratories Si4700 FM tuner family, and further increases the ease and attractiveness of adding FM radio reception to mobile devices through small size and board area, minimum component count, flexible programmability, and superior, proven performance. Si4708/09 software is backwards compatible to existing Si4700/01/02/03 FM Tuner designs and leverages Silicon Laboratories' highly successful and patented Si4700/01/02/03 FM tuner. The Si4708/09 benefits from proven digital integration and 100% CMOS process technology, resulting in a completely integrated solution. It is the industry's smallest footprint FM tuner IC requiring only 6.25 mm2 board space and one external bypass capacitor.

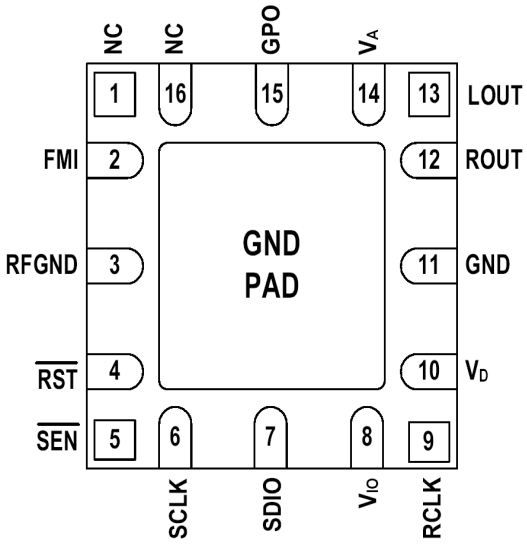
The device offers significant programmability, catering to the subjective nature of FM listeners' audio preferences and variable FM broadcast environments worldwide.

The Si4709 incorporates a digital processor for the European Radio Data System (RDS) and the US Radio Broadcast Data System (RBDS) including all required symbol decoding, block synchronization, error detection, and error correction functions.

RDS/RDBS* enables data such as station identification and song name to be displayed to the user. The Si4709 offers a detailed RDS view and a standard view, allowing adopters to selectively choose granularity of software is backwards compatible to the proven Si4701/03, adopted by leading cell-phone and MP3 manufacturers world-wide.

The Si4708/09 is based on the superior, proven performance of Silicon Laboratories' Aero architecture offering unmatched interference rejection and leading sensitivity. The device uses the same programming interface as the Si4700/01/02/03 and supports multiple bus modes. Power management is simplified with an integrated regulator allowing direct connection to a 2.7 to 5.5 V battery for VD and 2.7 to 5.5 V battery for VA.

The Si4708/09 device's high level of integration and complete FM system production testing increases quality to manufacturers, improves device yields, and simplifies device manufacturing and final testing.



Top View

Pin Number(s)	Name	Description
1, 16	NC	No Connect. Leave floating.
2	FMI	FM RF inputs.
3	RFGND	RF ground. Connect to ground plane on PCB.
4	$\overline{RST}$	Device reset input (active low).
5	$\overline{SEN}$	Serial enable input (active low).
6	SCLK	Serial clock input.
7	SDIO	Serial data input/output.
8	V_{IO}	I/O supply voltage.
9	RCLK	External reference oscillator input.
10	V_D	Digital supply voltage. May be connected directly to battery.
11, PAD	GND	Ground. Connect to ground plane on PCB.
12	ROUT	Right audio output.
13	LOUT	Left audio output.
14	V_A	Analog supply voltage. May be connected directly to battery.
15	GPO	General purpose input/output.

3.7 LCD Interface

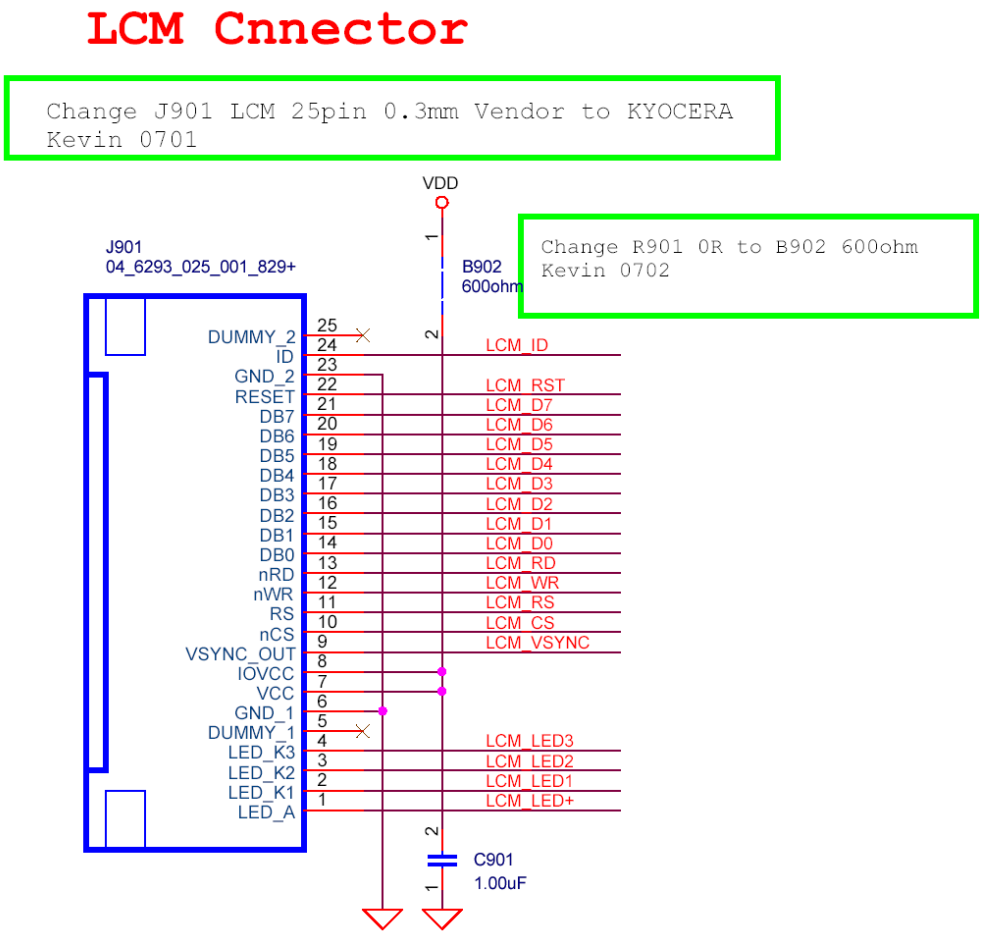


Figure.3-7-1 LCD Interface

The **IM200CBNUA** model is a Color TFT LCD supplied by LG Innotek.

This main LCD has a 2.00 inch diagonally measured active display area with 176(RGB)X220 resolution Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

Main LCD color is determined with 262,000colors signal for each pixel.

The **IM200CBNUA** has been designed to apply the interface method that enables low power, high speed, and high contrast.

The **IM200CBNUA** is intended to support applications where thin thickness, wide viewing angle and low power consumption are critical factors and graphic displays are important.

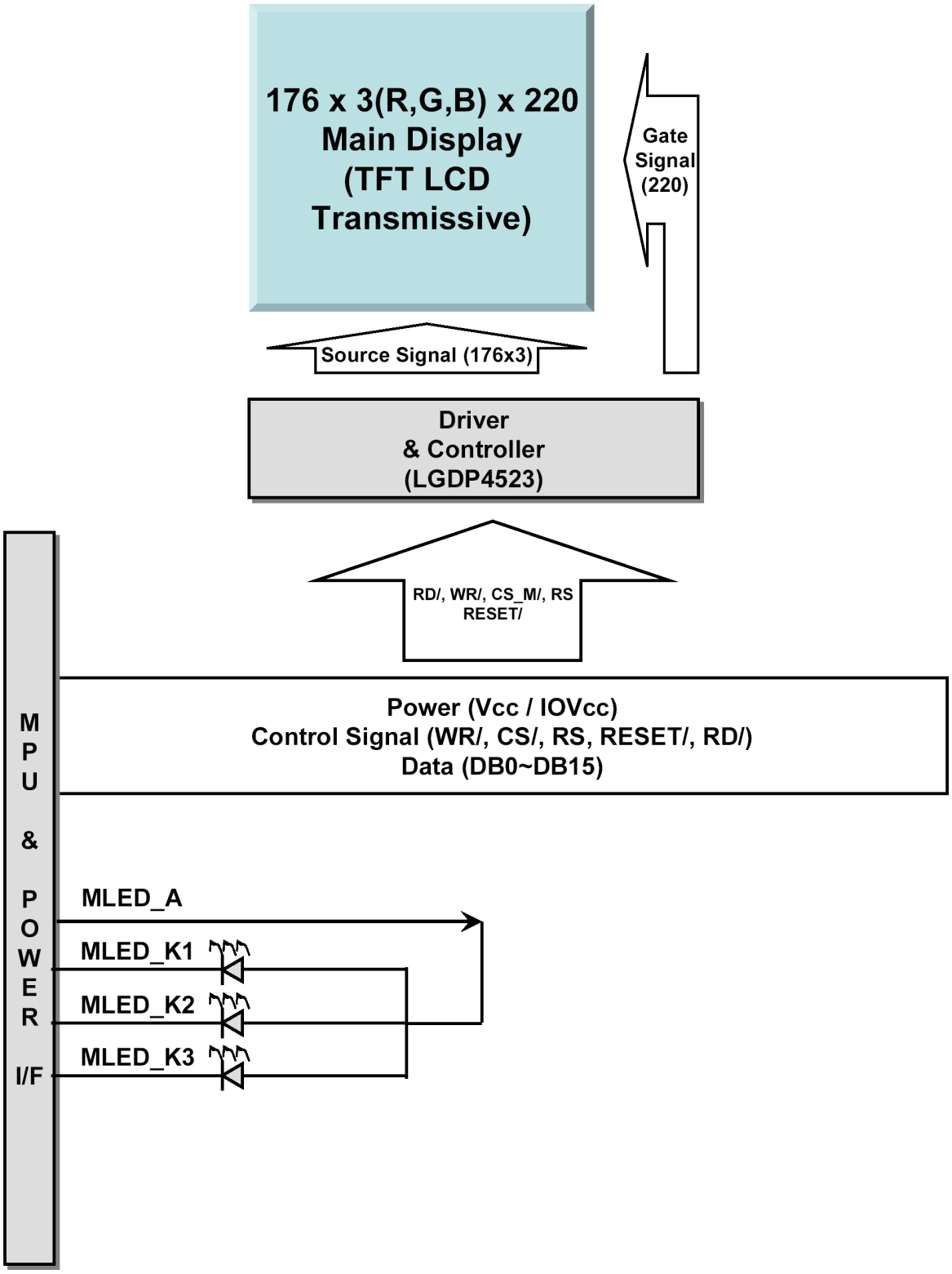


Figure. 3-7-2 IM200CBNUA Block Diagram

Pin No.	Symbol	Description	Remark
1	GND	-	Ground
2	LED_Anode	I	Power Supply for LED (Anode)
3	LED_Cathod1	O	LED1 Cathode Connection
4	LED_Cathod2	O	LED2 Cathode Connection
5	LED_Cathod3	O	LED3 Cathode Connection
6	GND	-	Ground
7	VSYNC_OUT	I/O	FLM
8	/CS	I	Chip Select. Active low
9	RS	I	Select the Register. High: Control, Low: Index/Status
10	/WR	I	Write-Strobe Signal. Active low
11	/RD	I	Read-Strobe Signal Active low
12	D0	I/O	Bi-Directional Data Bus
13	D1	I/O	Bi-Directional Data Bus
14	D2	I/O	Bi-Directional Data Bus
15	D3	I/O	Bi-Directional Data Bus
16	D4	I/O	Bi-Directional Data Bus
17	D5	I/O	Bi-Directional Data Bus
18	D6	I/O	Bi-Directional Data Bus
19	D7	I/O	Bi-Directional Data Bus
20	D8	I/O	Bi-Directional Data Bus
21	D9	I/O	Bi-Directional Data Bus
22	D10	I/O	Bi-Directional Data Bus
23	D11	I/O	Bi-Directional Data Bus
24	D12	I/O	Bi-Directional Data Bus
25	D13	I/O	Bi-Directional Data Bus
26	D14	I/O	Bi-Directional Data Bus
27	D15	I/O	Bi-Directional Data Bus
28	RESET/	I	Reset Pin. Initialize the LSI at the low level
29	IF_MODE2	I/O	Mode Select. 8/16Bit: L, 9Bit: H
30	IF_MODE1	I/O	Mode Select. 8/9Bit: H, 16Bit: L
31	MAKER_ID(Low)	O	Distinction of LCD maker (LGIT: Low)
32	IOVCC	I	Power Supply for internal logic regulator circuits
33	VCC	I	Power Supply for internal analog regulator circuits
34	GND	-	Ground

Figure. 3-7-3 IM200CBNUA PIN DESCRIPTION

3.8 SIM Card &SD Card Interface

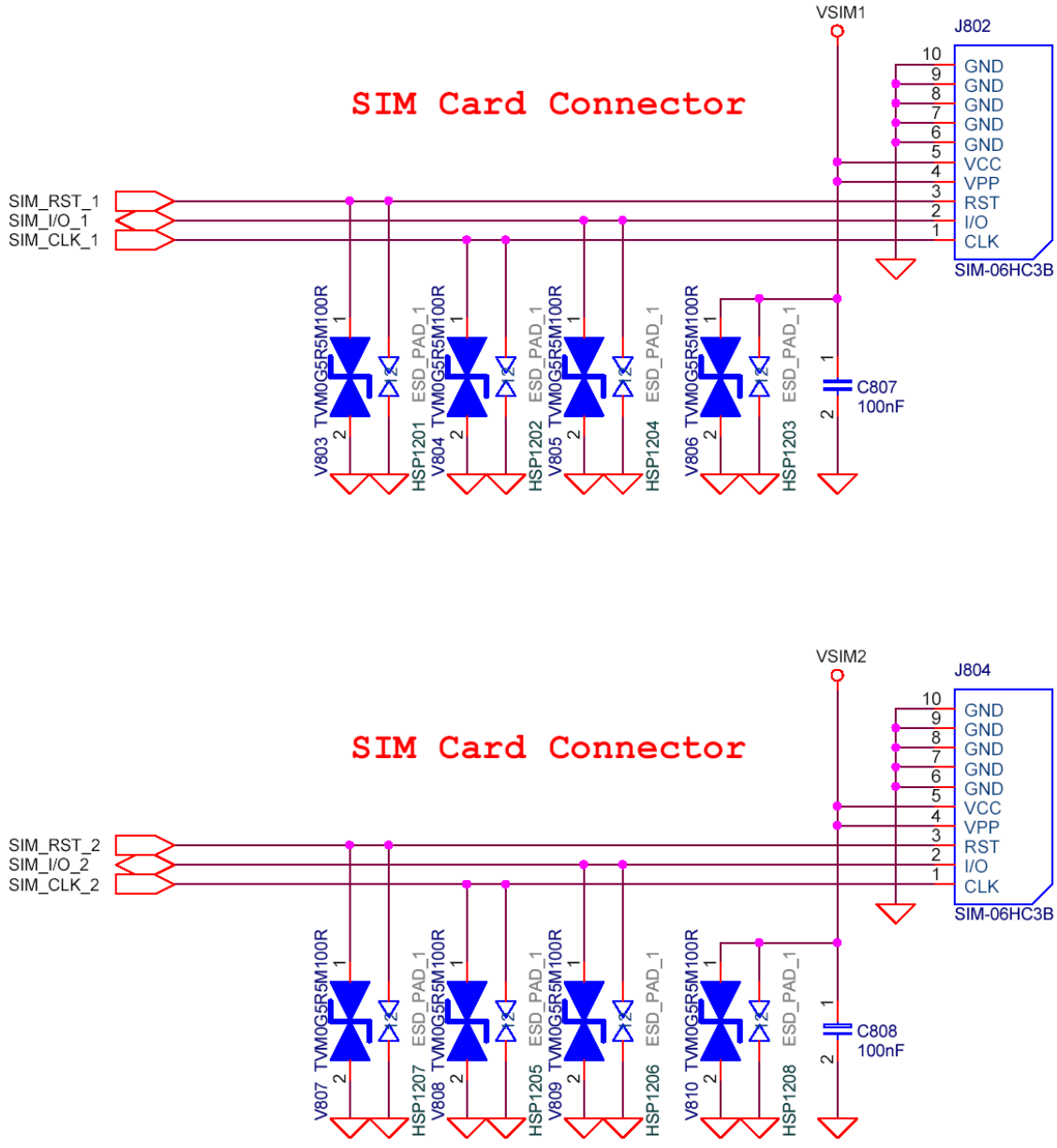


Figure.3-8-1 SIM CARD Interface

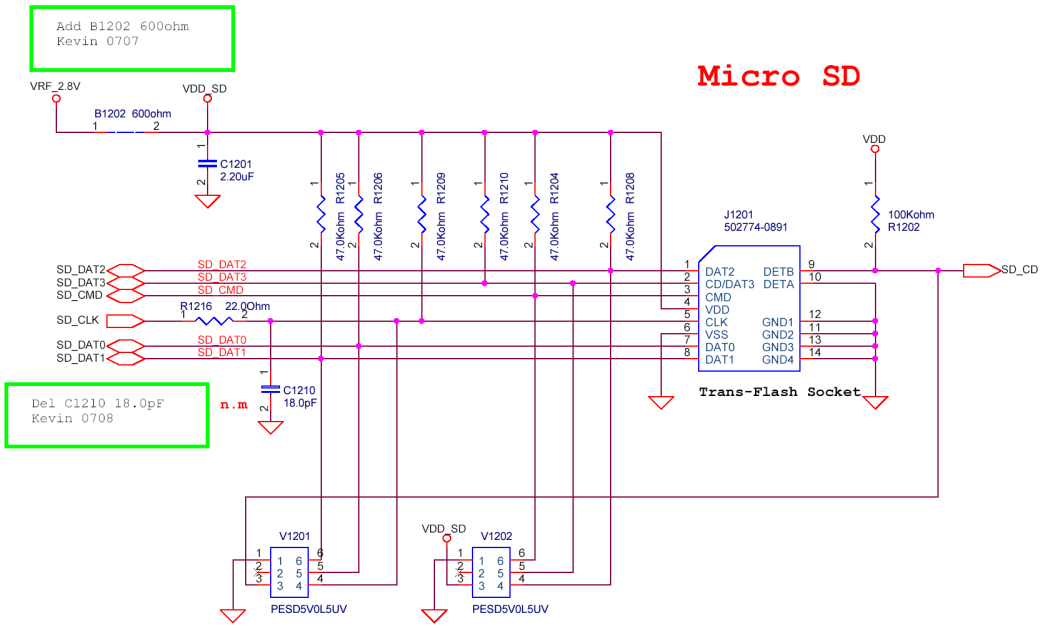


Figure.3-8-2 SD CARD Interface

The MT6235 contains a dedicated smart card interface to allow the MCU access to the SIM card. It can operate via 4terminals, using VSIM, SIMI/O, SIMRST, SIMCLK

The VSIM is used to control the external voltage supply to the SIM card. SIMRST is used as the SIM card reset signal. SIMI/O and SIMCLK are used for data exchange purpose.

The SIM interface acts as a half duplex asynchronous communication port and its data format is composed of ten consecutive bits: a start bit in state Low, eight information bits, and a tenth bit used for parity checking.

The SD Card control signal and data signal is controlled by MT6235.

3.9 KEYPAD Interface

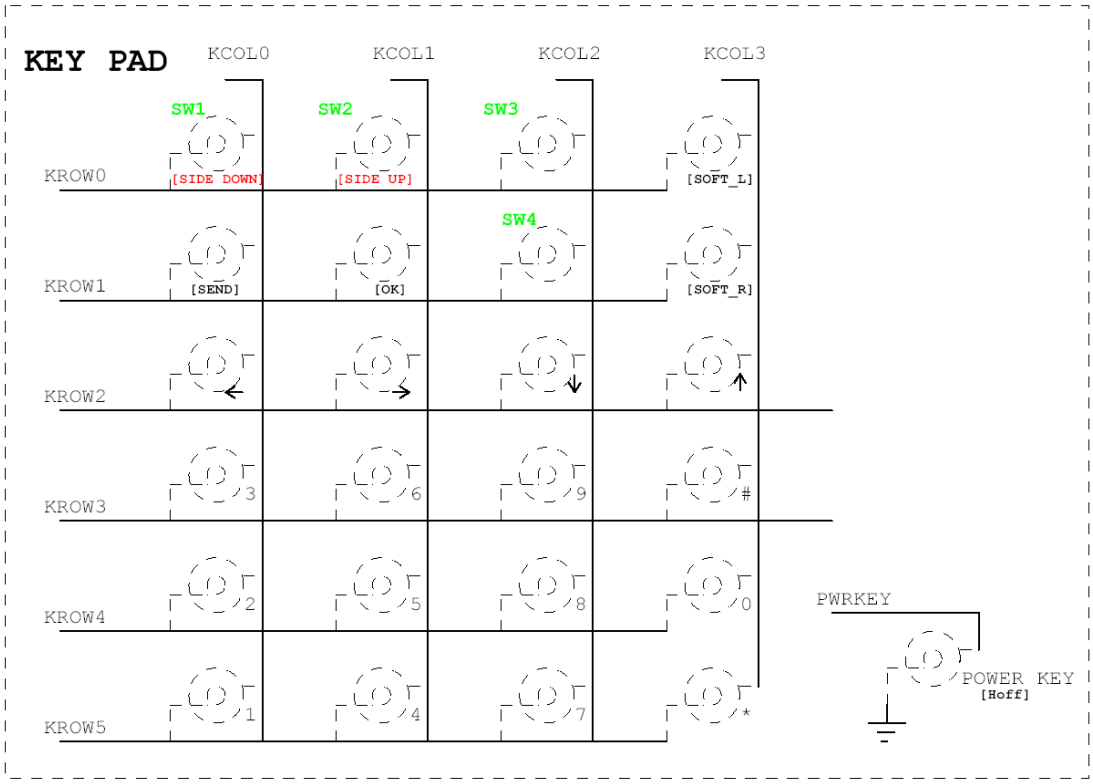


Figure.3-9-1. KEYPAD Interface

The keypad can be divided into two parts: one is the keypad interface including 4 columns and 6 rows; the other is the key detection block which provides key pressed, key released and de-bounce mechanisms. Each time the key is pressed or released, i.e. something different in the 4 x 6 matrix, the key detection block senses the change and recognizes if a key has been pressed or released. Whenever the key status changes and is stable, a KEYPAD IRQ is issued.

The MCU can then read the key(s) pressed directly in KP_HI_KEY, KP_MID_KEY and KP_LOW_KEY registers. To ensure that the key pressed information is not missed, the status register in keypad is not read-cleared by APB read command. The status register can only be changed by the key-pressed detection FSM.

3.10 Battery Charging Block Interface

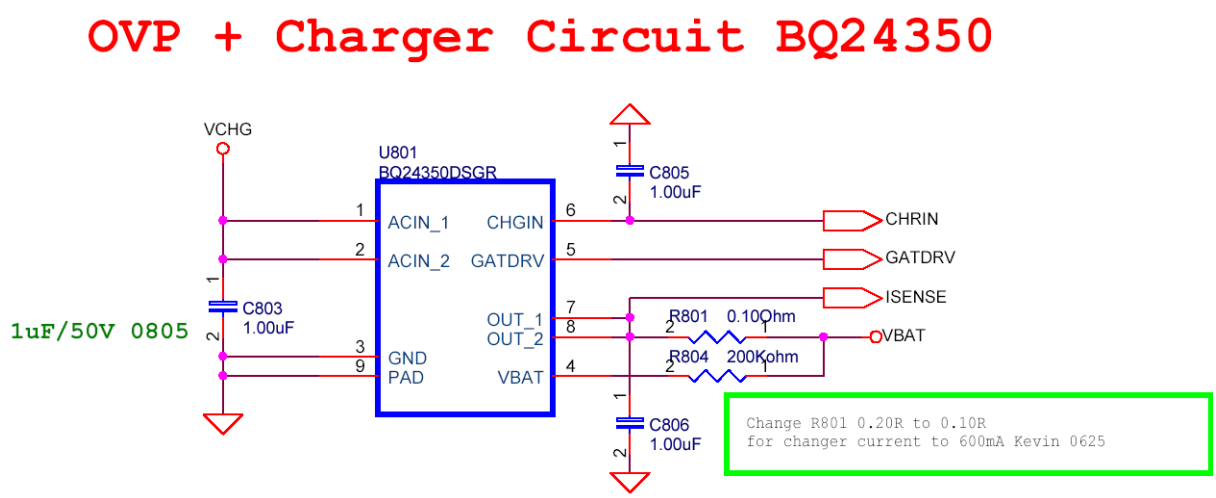


Figure.3-10-1 Charging IC Interface

The BQ24350DSGR is controlled by MT6235.

3.11 Audio Interface

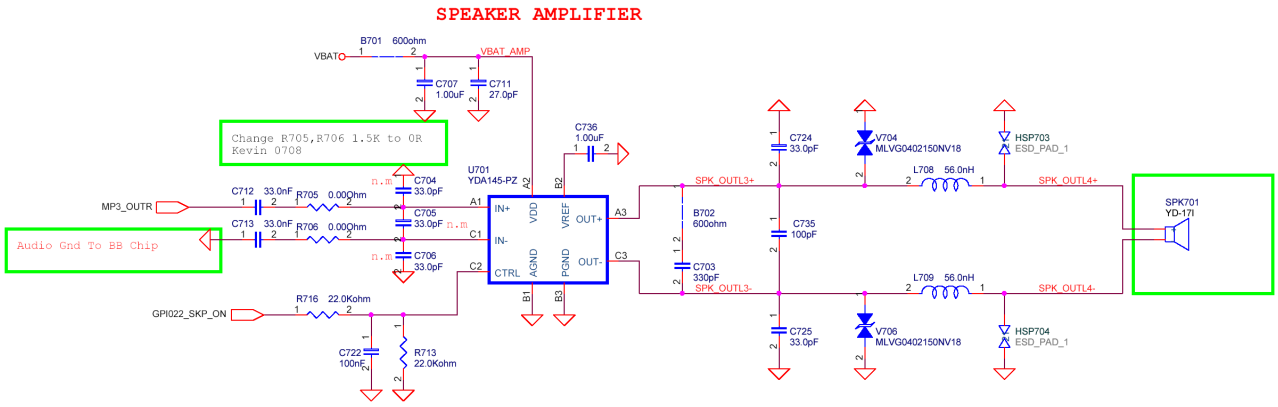


Figure.3-11-1 Main Speaker Interface

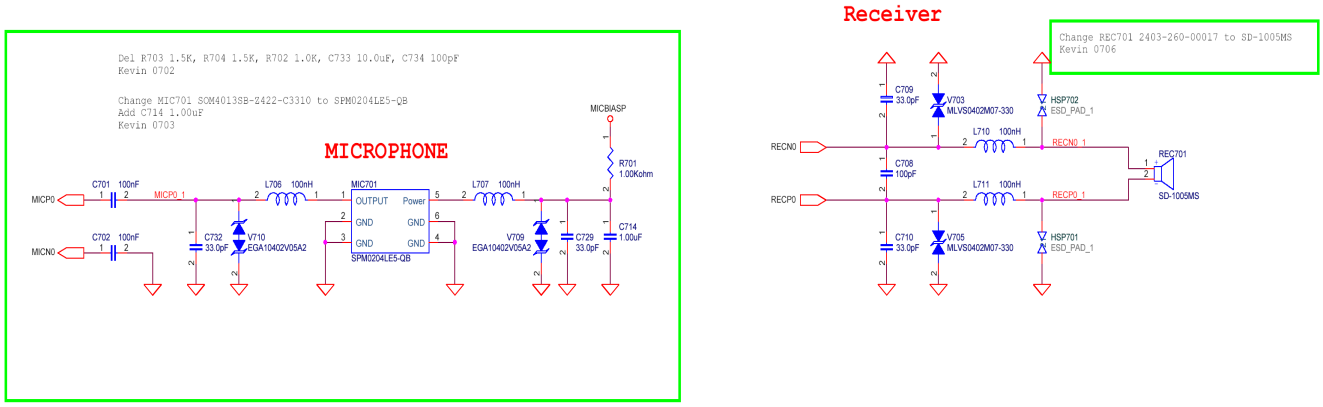


Figure.3-11-2 Main Microphone & Receiver Interface

YDA145 (D-4H) is a digital audio power amplifier IC with maximum output of 2.1W (R_L=4Ω)×1ch.

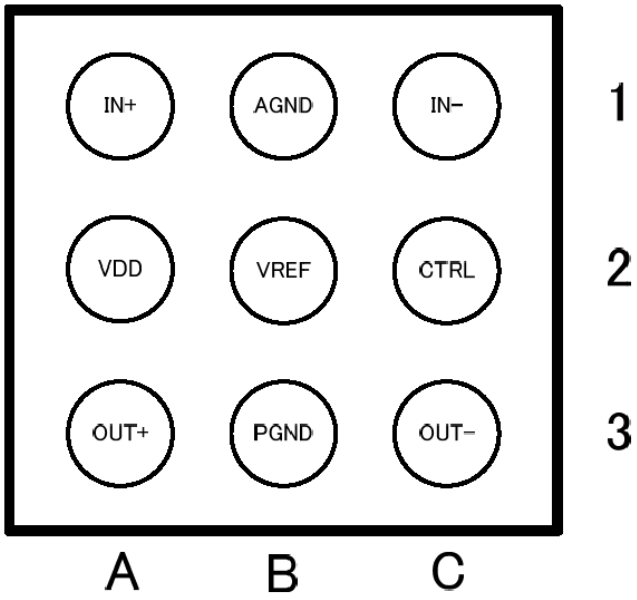
YDA145 has a “Pure Pulse Direct Speaker Drive Circuit” which directly drives speakers while reducing distortion of pulse output signal and reducing noise on the signal, and realizes the highest standard low distortion rate characteristics and low noise characteristics among digital amplifier ICs for mobile use.

In addition, circuit design with fewer external parts can be made depend on the condition of use because corresponds to filter less.

The YDA145 features Yamaha original non-clip output control function which detects output signal clip due to the over level input signal and suppress the output signal clip automatically. Also the non-clip output control function can adapt the output clip caused by power supply voltage down with battery. This is the difference from the traditional AGC (Auto Gain Control) or ALC (Auto Level Control) circuit.

YDA145 has the power-down function which can minimizes the power consumption in the standby state.

As for protection function, overcurrent protection function for speaker output terminal, overtemperatue protection function for inside of the device, and low supply voltage malfunction preventing function are prepared.



< 9-ball WLCSP Bottom View >

No.	Name	I/O	Protection circuit composition	Function
A1	IN+	A	PN	Positive input terminal (differential +)
A2	VDD	Power	-	Power supply
A3	OUT+	O	-	Positive output terminal (differential +)
B1	AGND	GND	-	GND for analog circuits
B2	VREF	A	PN	Analog reference power supply terminal
B3	PGND	GND	-	GND for output
C1	IN-	A	PN	Negative input terminal (differential -)
C2	CTRL	I	N	Power down and Non-clip control terminal
C3	OUT-	O	-	Negative output terminal (differential -)

3.12 Vibrator Interface

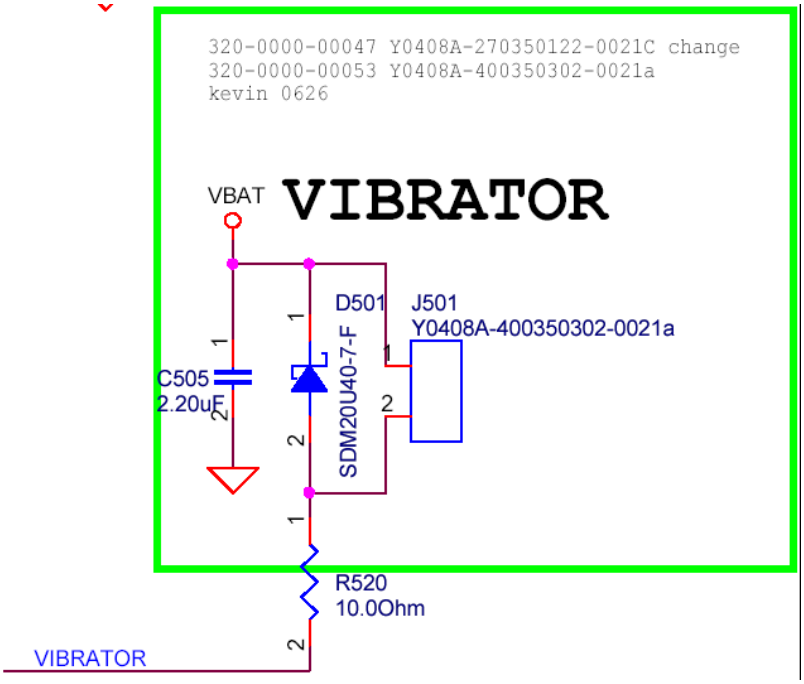


Figure.3-12-1 Vibrator Interface

This handset has Vibrator operation. Control signal is controlled by MT6235

3.13 Camera Interface

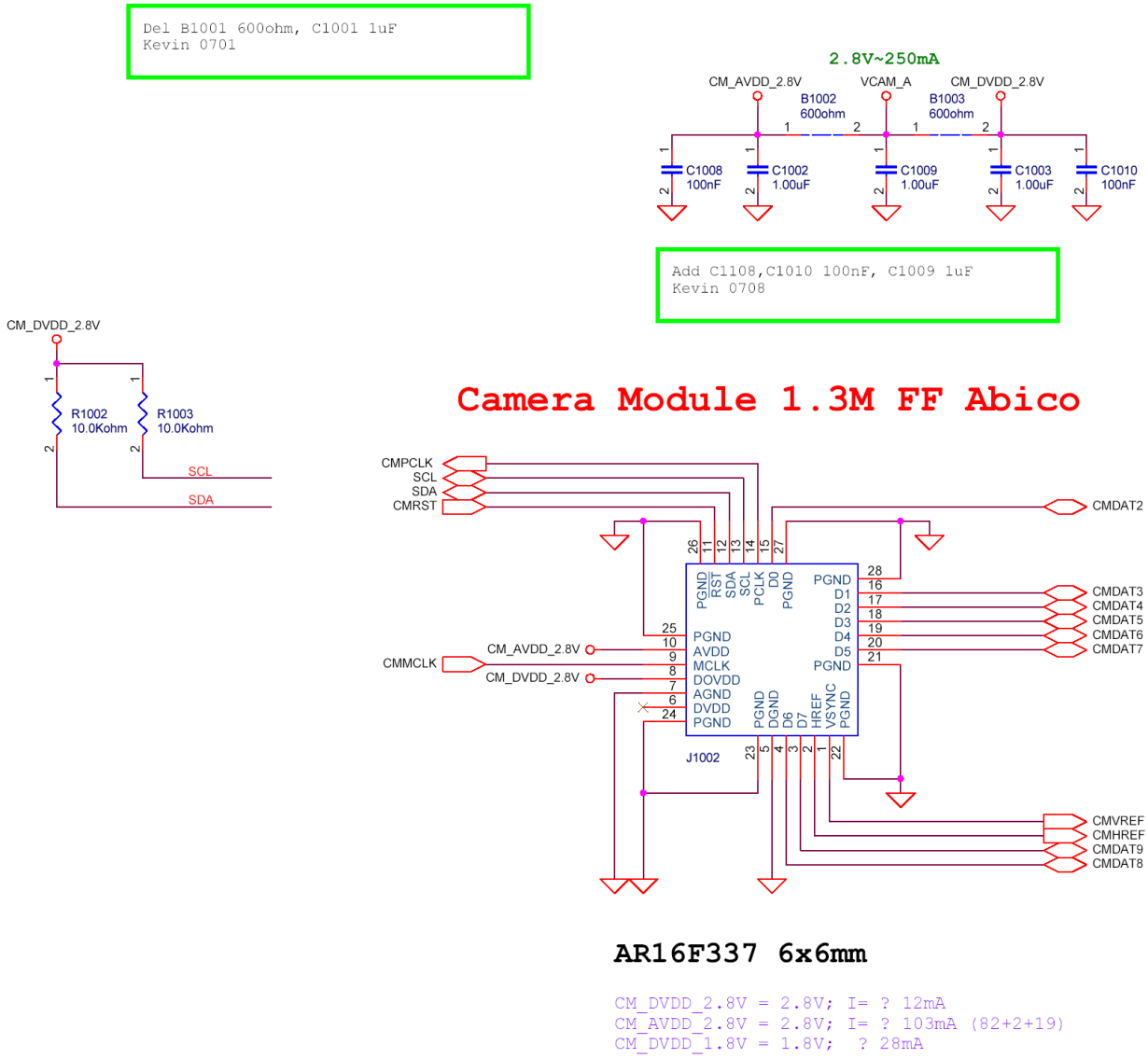


Figure.3-13-1Camera Interface

3.13.1 Pin Description

Pin No.	Pin Name	Pin Type	Description
1	VSYNC	Output	Vertical sync output
2	HSYNC	Output	Horizontal sync output
3	D7	Output	YUV/RGB video component output bit[7]
4	D6	Output	YUV/RGB video component output bit[6]
5	DGND	Ground	Digital ground
6	NC		
7	AGND	Ground	Analog ground
8	DOVDD	Power	Digital power supply for I/O (1.8V ~ 3.0V)
9	MCLK	Input	System clock input
10	AVDD	Power	Analog power supply(2.45V~3.0V)
11	/RST	Input	Clears all registers and resets them to their default values. 0: Reset mode 1: Normal mode
12	SDA	In/Out	SCCB serial interface data I/O
13	SCL	Input	SCCB serial interface clock input
14	PCLK	Output	Pixel clock output
15	D0	Output	YUV/RGB video component output bit[0]
16	D1	Output	YUV/RGB video component output bit[1]
17	D2	Output	YUV/RGB video component output bit[2]
18	D3	Output	YUV/RGB video component output bit[3]
19	D4	Output	YUV/RGB video component output bit[4]
20	D5	Output	YUV/RGB video component output bit[5]

4.Trouble Shooting

BB SUb-systems

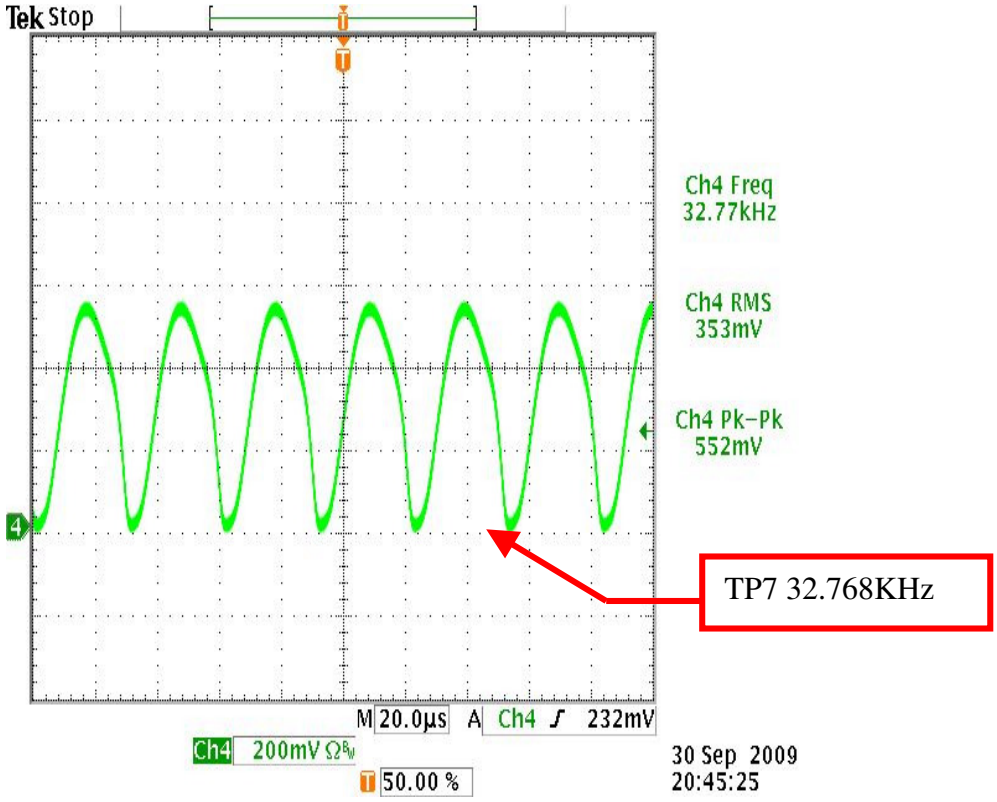
4.1 Power On Trouble

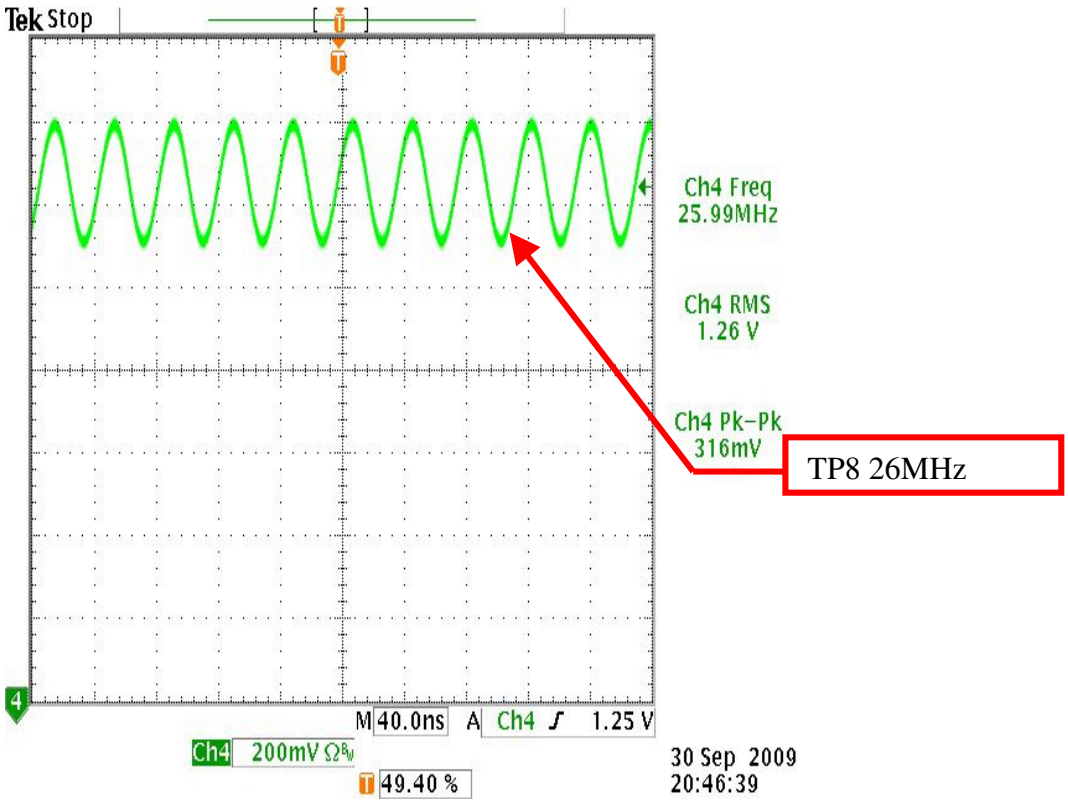
4.1.1 Test Point

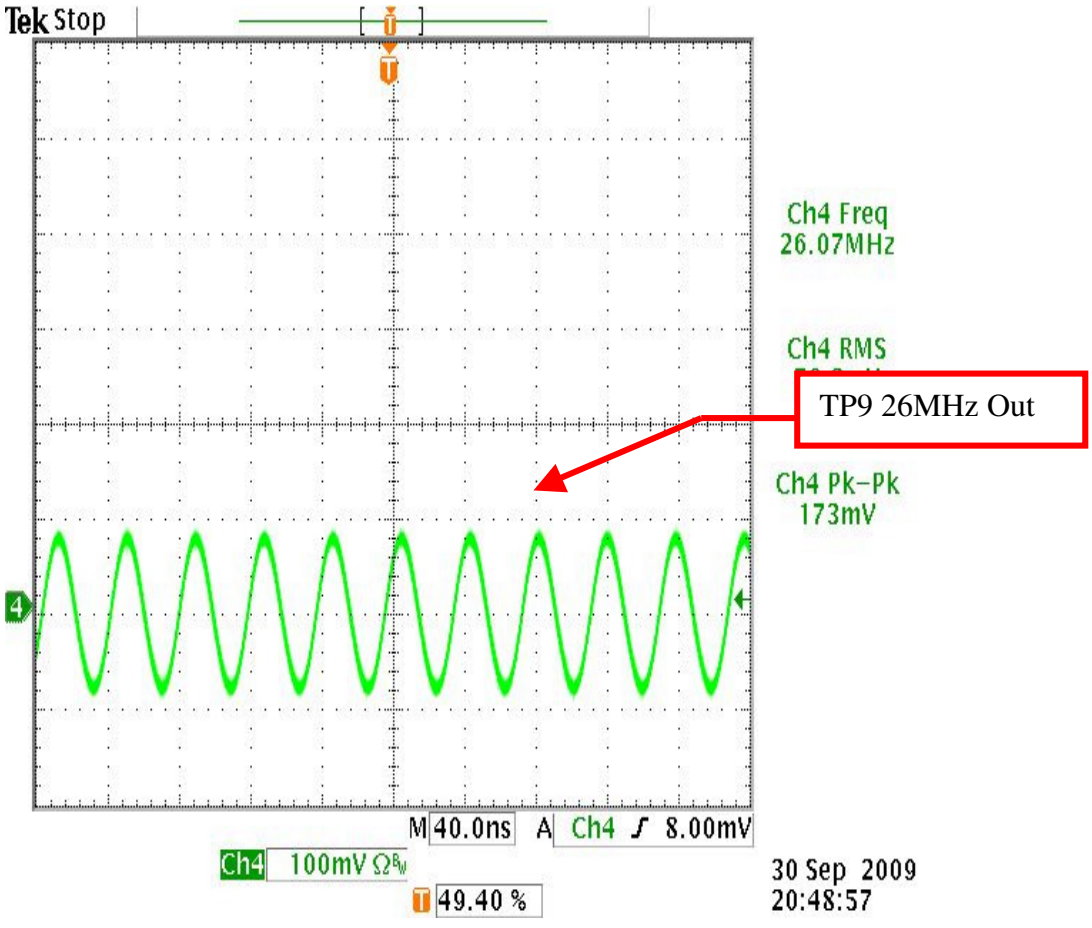
- Power-On key detection(PWRON signal)
- Outputs of CPU U401, LDOs U202
- Os Battery Voltage(Need to over 3.35V)
- Oscillate frequency of X401 and X201

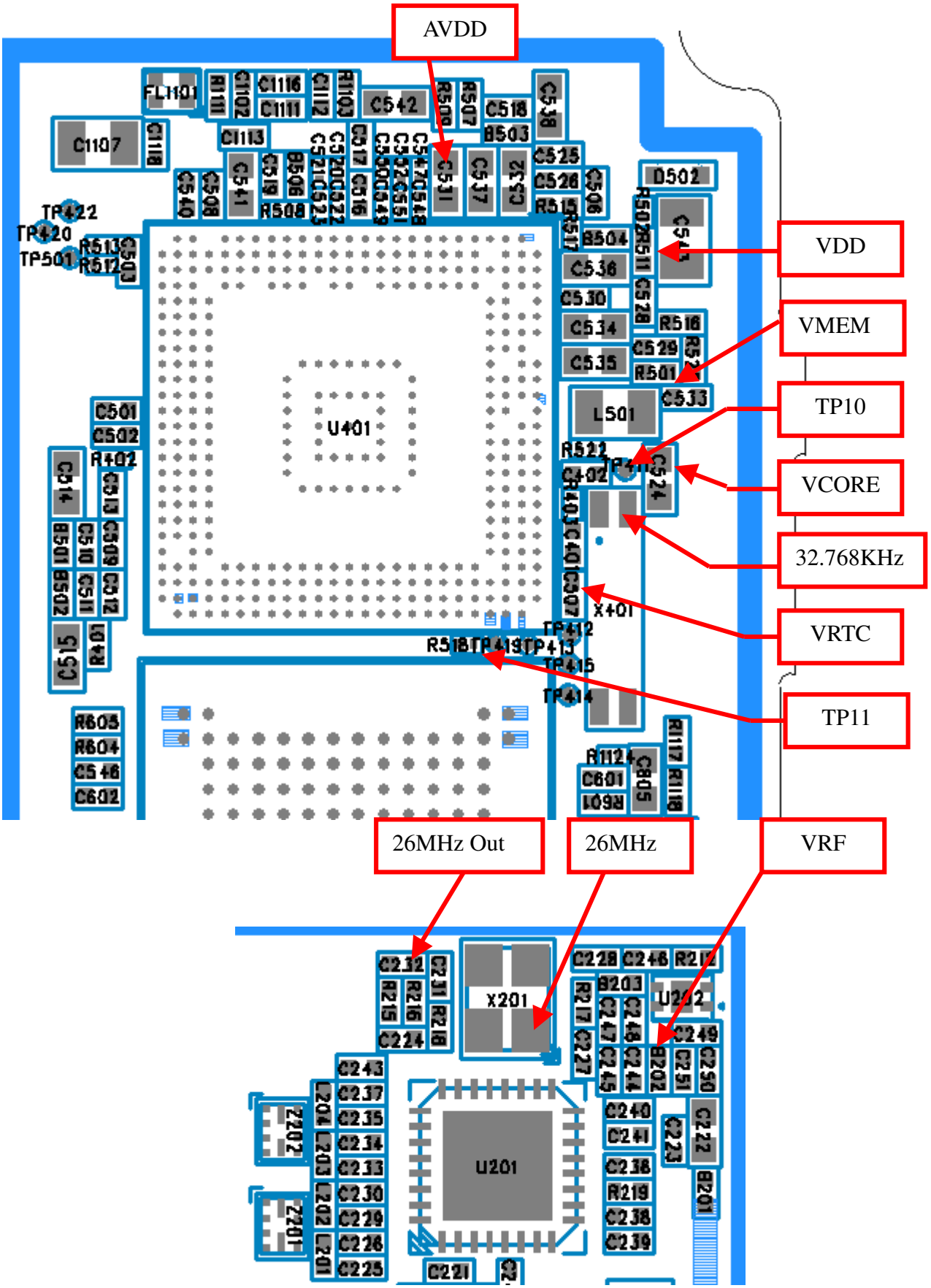
	Voltage	PART
VDD	2.8V	TP1(R511.2)
VMEM	1.8V	TP2(R501.1)
AVDD	2.8V	TP3(C531.1)
VCORE	1.2V	TP4(C524.1)
VRF	2.8V	TP5(B202.1)
VRTC	1.2V	TP6(C507.1)

	signal	PART
32.768KHz	32.768KHz Clock signal	TP7(X401.4)
26MHz	26MHz Clock signal	TP8(X201.1)
26MHz out	26MHzClock signal	TP9(C232.1)

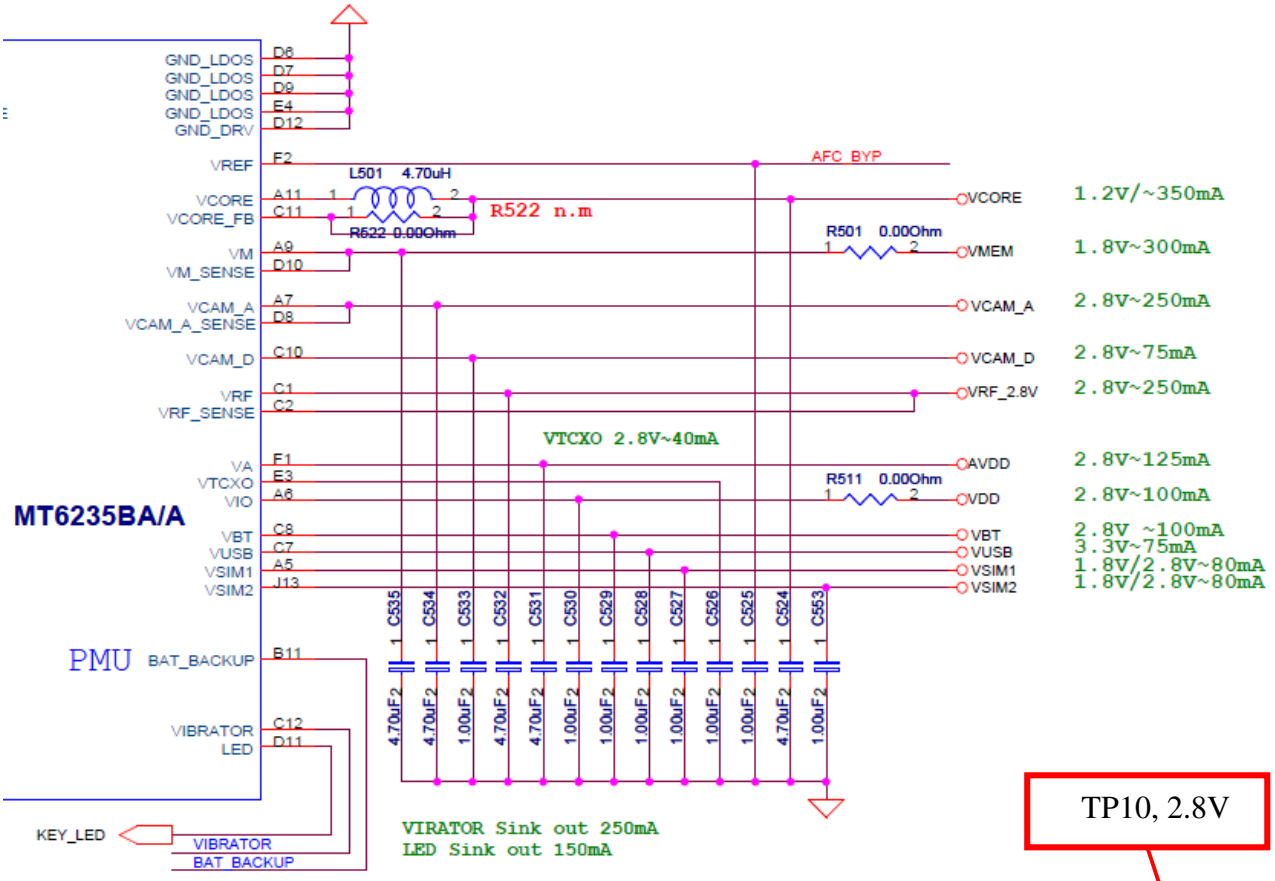


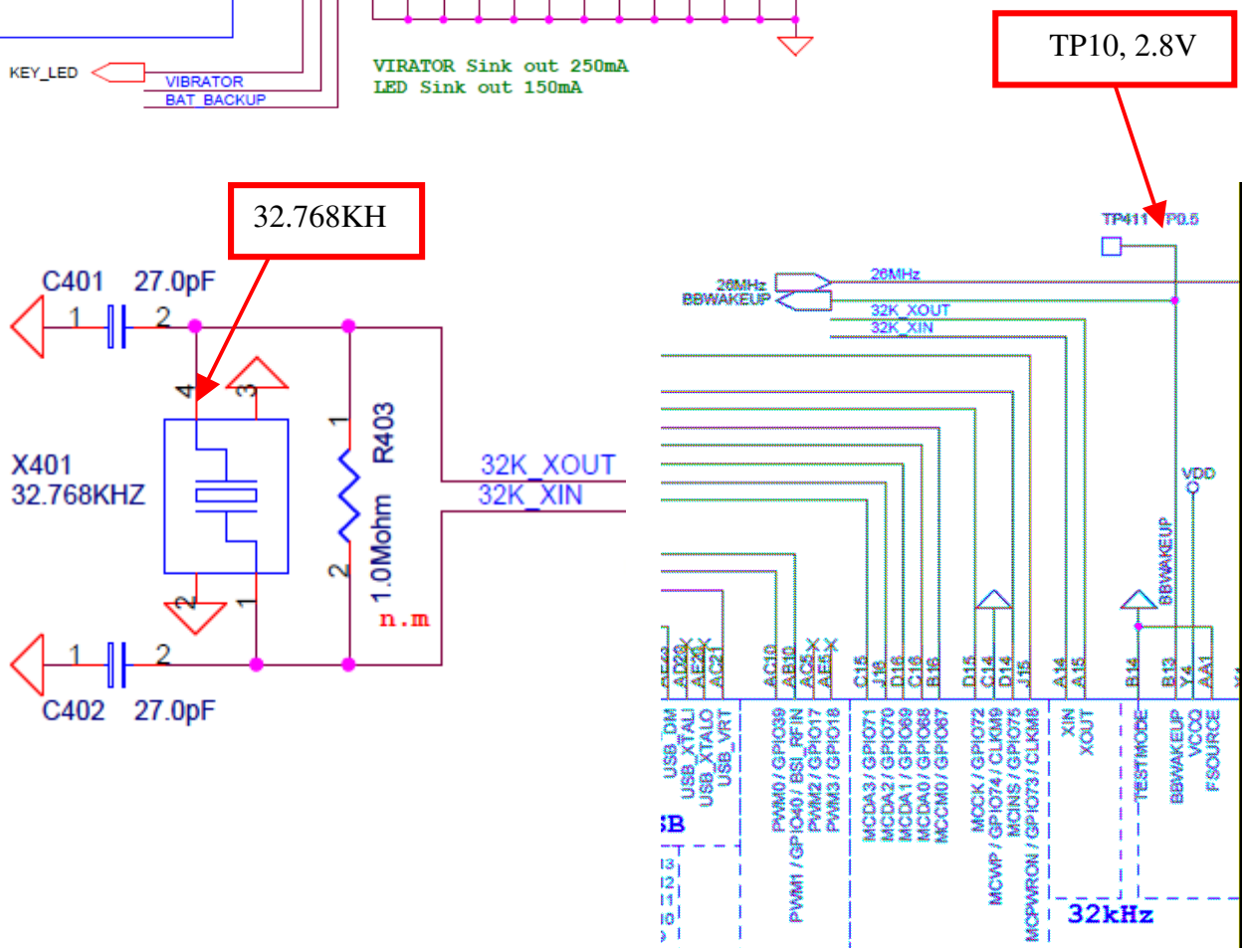

Tek Stop
Ch4 Freq
25.99MHz
Ch4 RMS
1.26 V
Ch4 Pk-Pk
316mV
TP8 26MHz
M 40.0ns A Ch4 1.25 V
Ch4 200mV Ω
49.40 %
30 Sep 2009
20:46:39

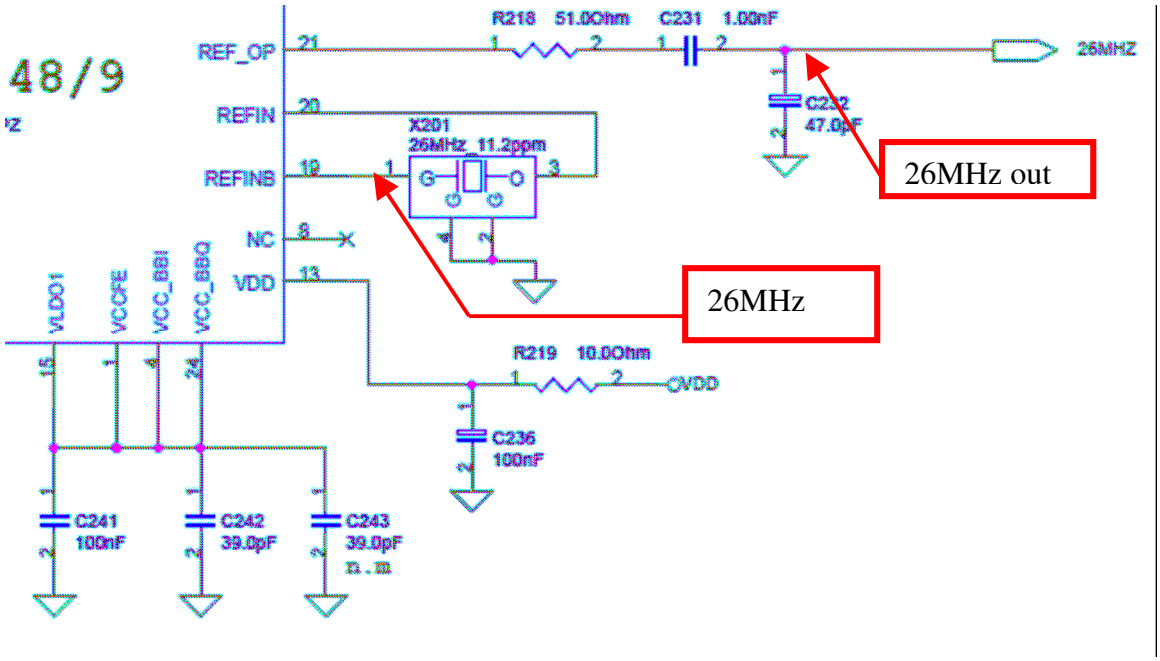

Tek Stop
Ch4 Freq
26.07MHz
Ch4 RMS
TP9 26MHz Out
Ch4 Pk-Pk
173mV
M 40.0ns A Ch4 8.00mV
Ch4 100mV Ω
49.40 %
30 Sep 2009
20:48:57

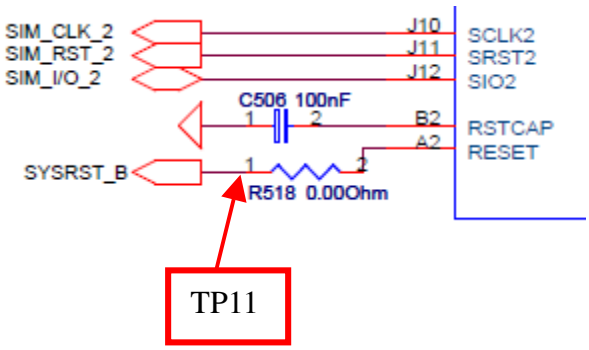

AVDD
VDD
VMEM
TP10
VCORE
32.768KHz
VRTC
TP11
26MHz Out
26MHz
VRF
U401
X401
X201
U201
L501
D502
TP422
TP420
TP501
TP412
TP413
TP415
TP414

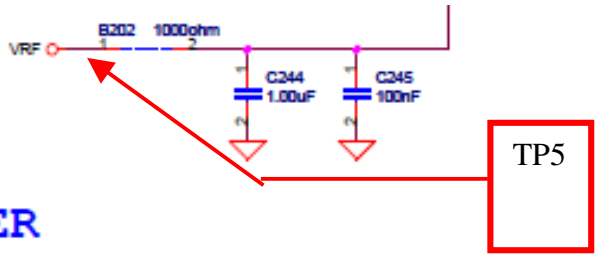
4.1.2 Circuit Diagram



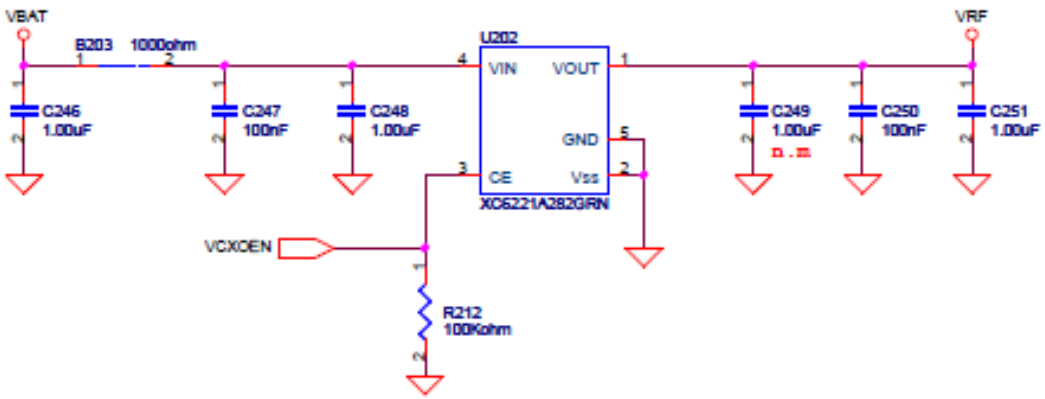



48/9
REF_OP
REFIN
REFINB
NC
VDD
R218 51.0Ohm
C231 1.00nF
26MHZ
X201
26MHz 11.2ppm
26MHz out
26MHz
R219 10.0Ohm
C236
100nF
C241
100nF
C242
39.0pF
C243
39.0pF

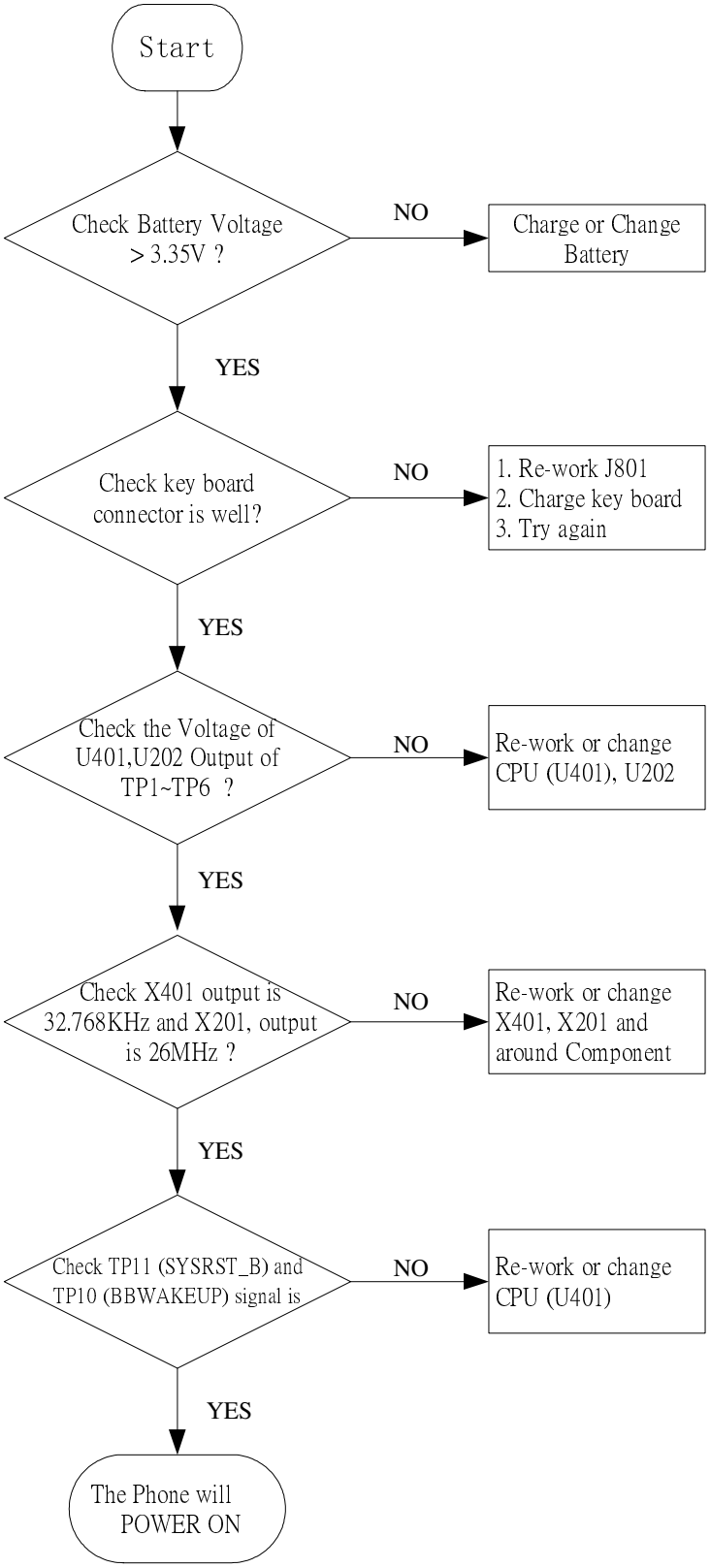

SIM_CLK_2
SIM_RST_2
SIM_I/O_2
SYSRST_B
J10
J11
J12
SCLK2
SRST2
SIO2
C506 100nF
B2
A2
RSTCAP
RESET
R518 0.00Ohm
TP11


VRF
B202 1000ohm
C244
1.00uF
C245
100nF
TP5

TRX POWER

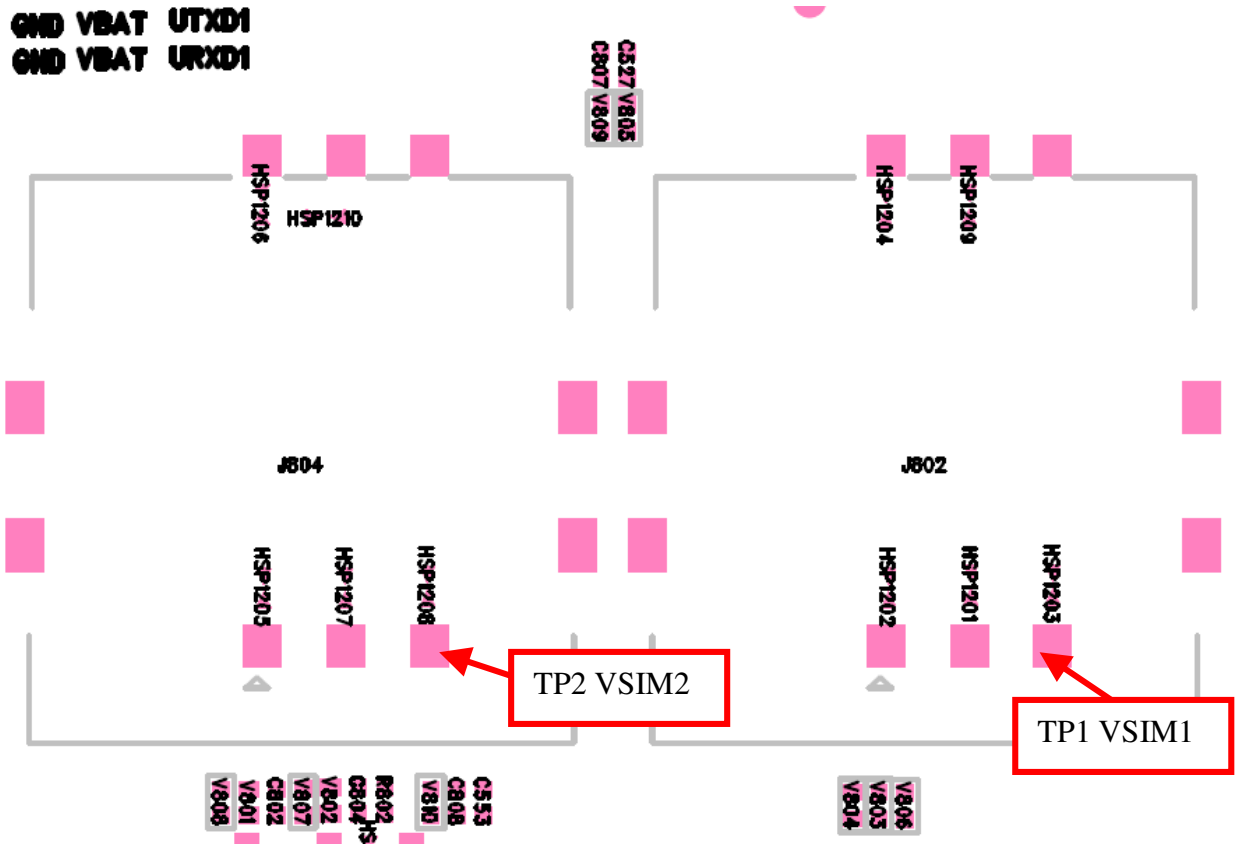

VBAT
B203 1000ohm
C246
1.00uF
C247
100nF
C248
1.00uF
U202
VIN
VOUT
GND
CE
Vss
XC6221A282GRN
C249
1.00uF
C250
100nF
C251
1.00uF
VRF
VCXOEN
R212
100Kohm

4.1.3 Checking Flow



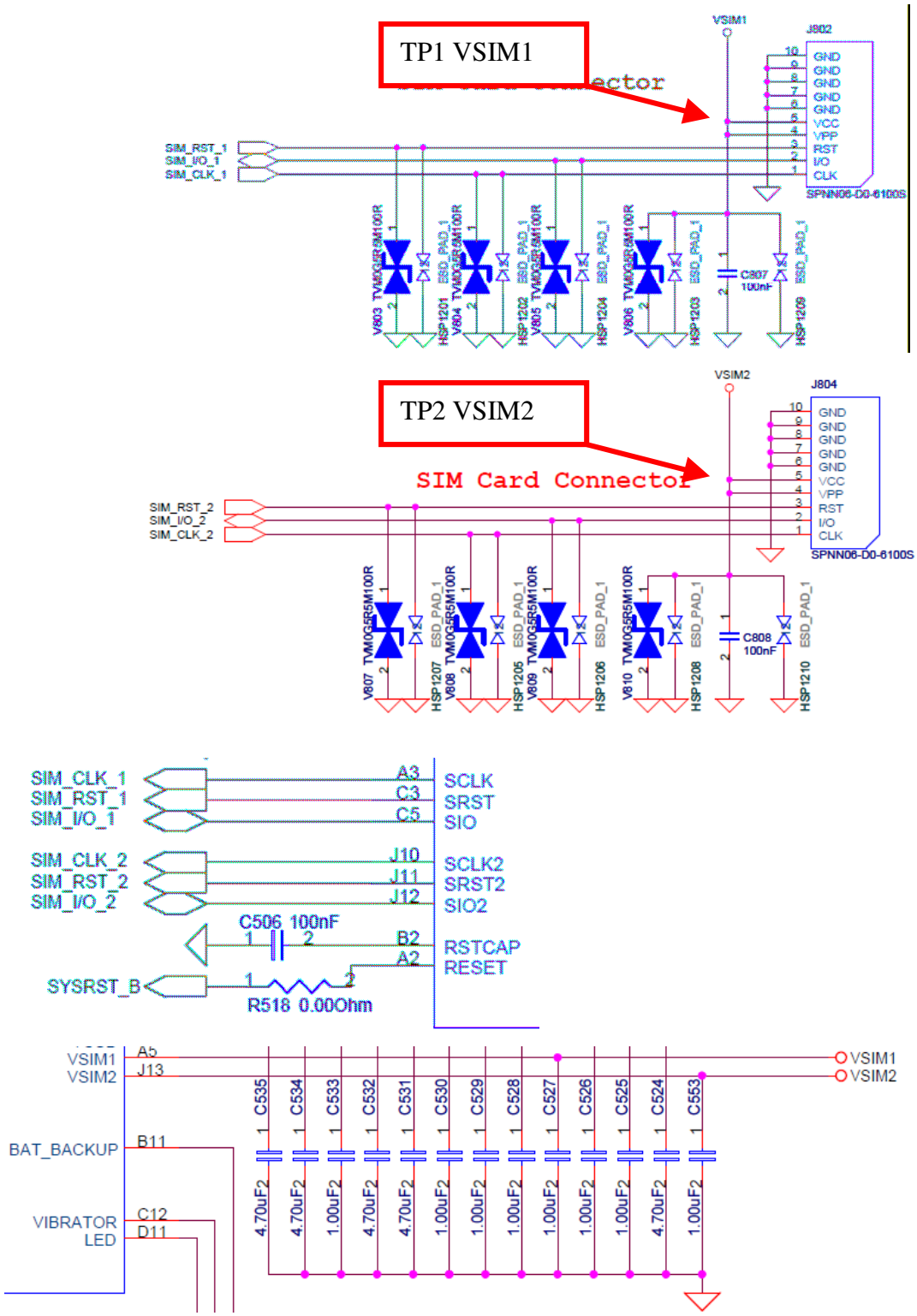
4.2 SIM Card Trouble

4.2.1 Test Point

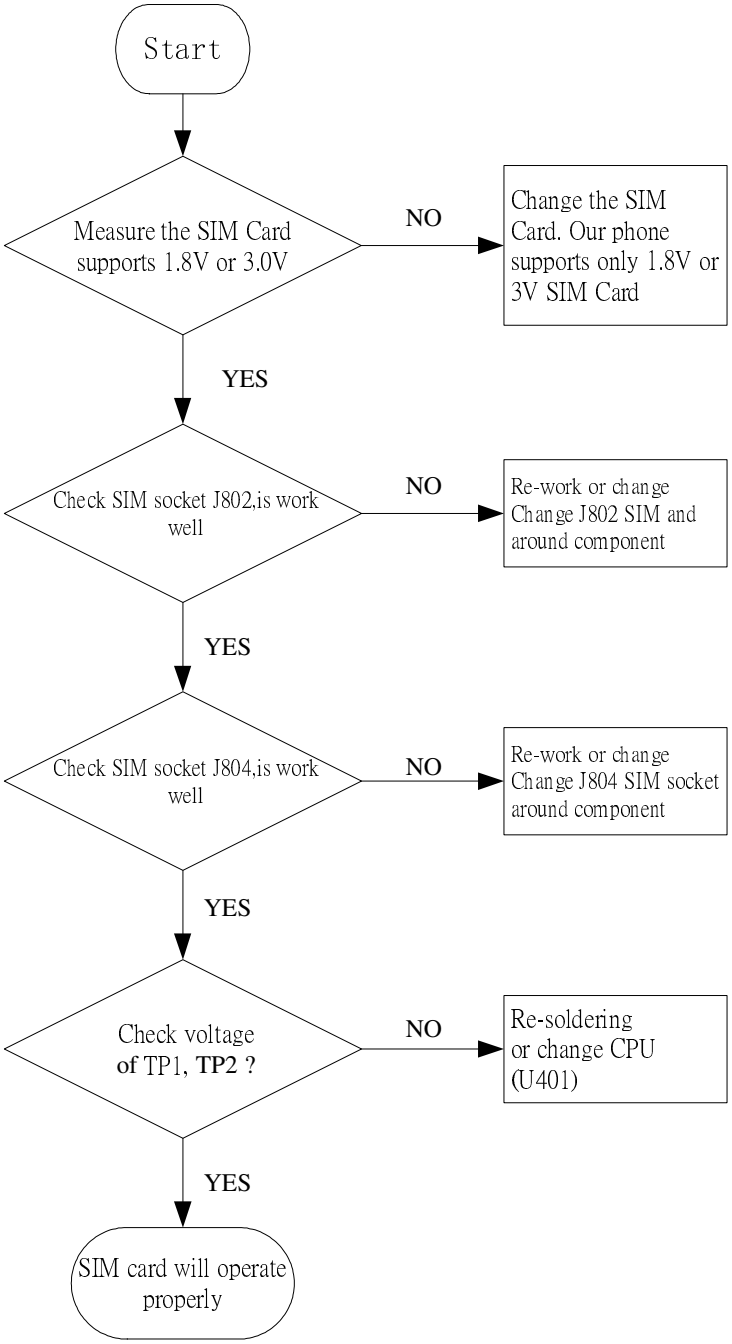


	Voltage	PART
VSIM1	1.8V or 3.0V	TP1(J802.5)
VSIM2	1.8V or 3.0V	TP2(J804.5)

4.2.2 Circuit Diagram

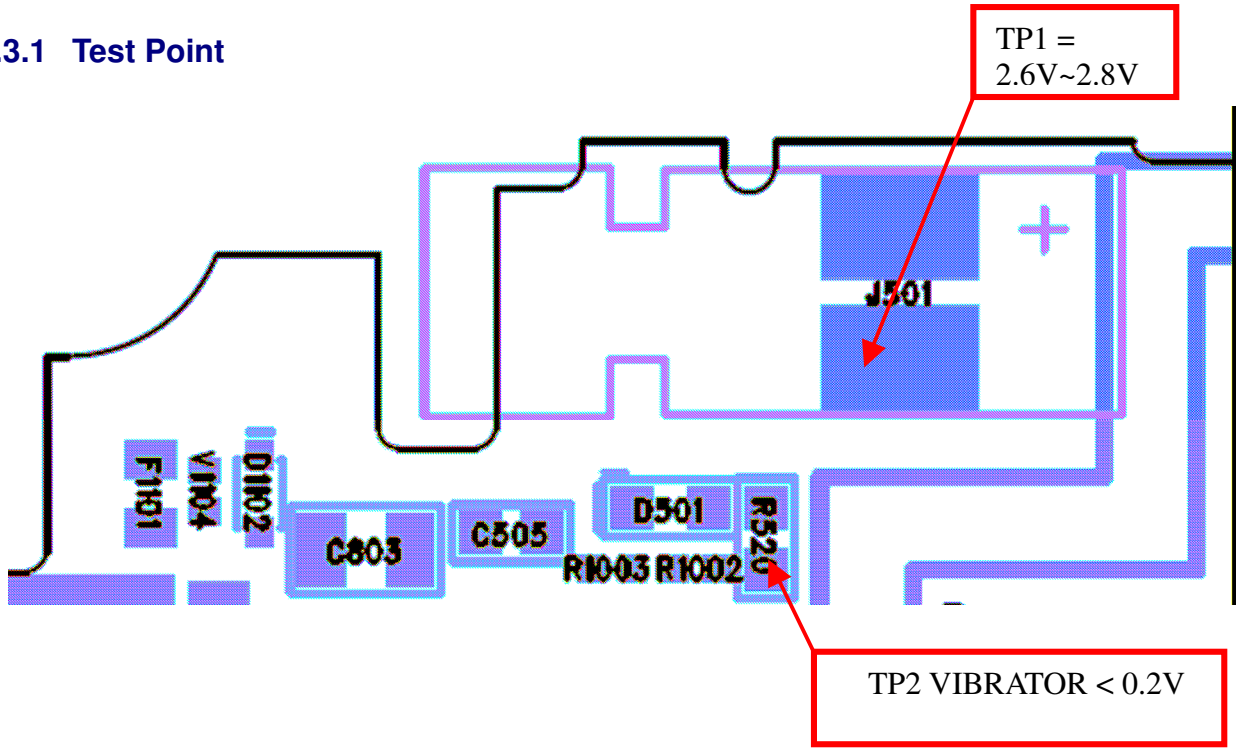


4.2.3 Checking Flow

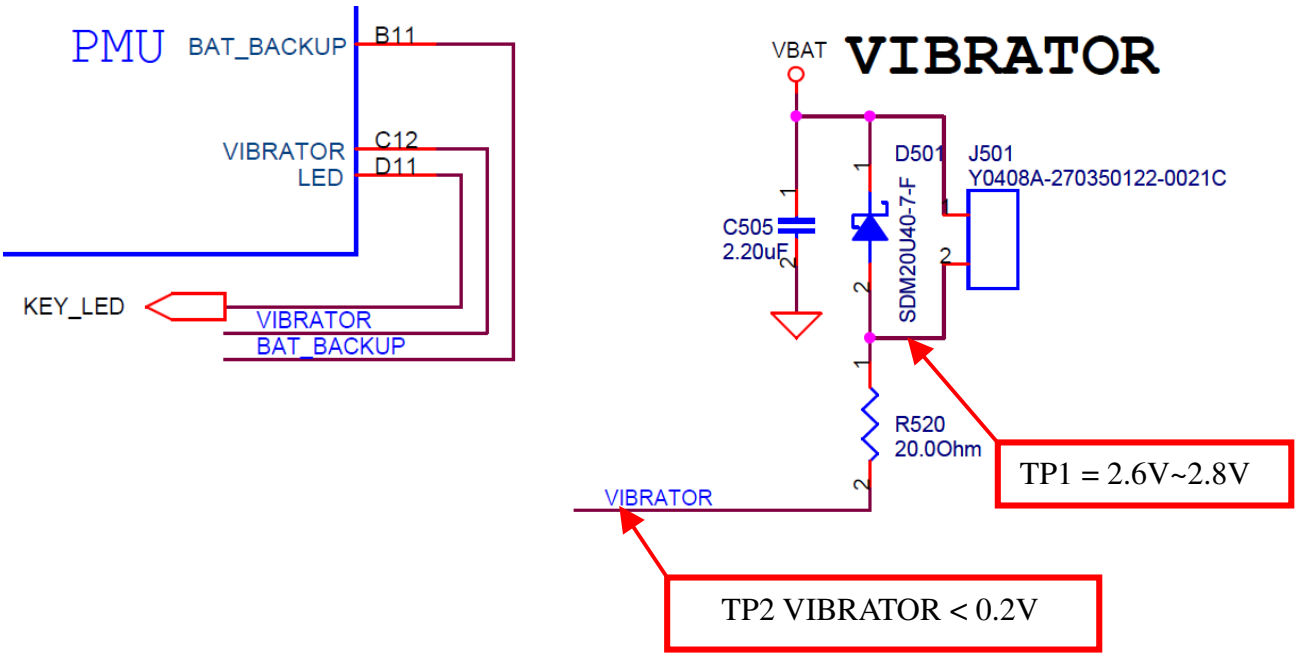


4.3 Vibrator Trouble

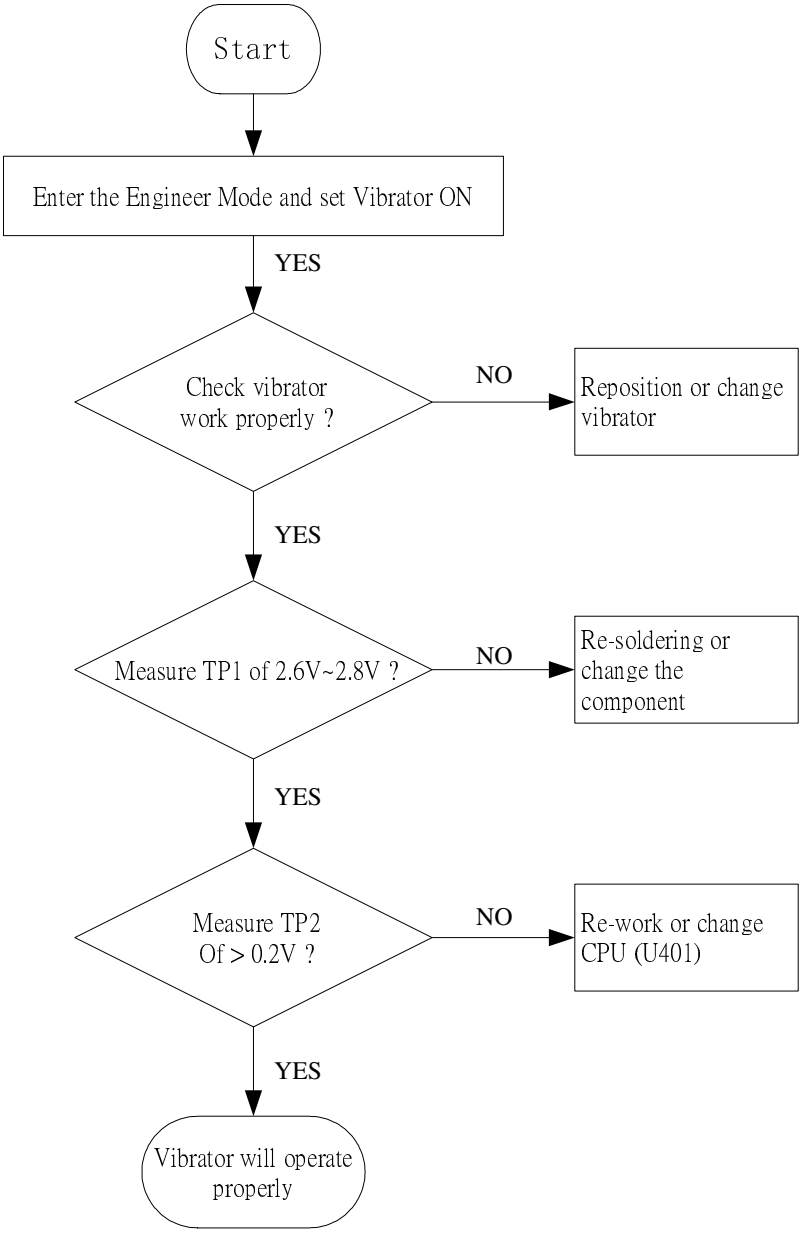
4.3.1 Test Point



4.3.2 Circuit Diagram

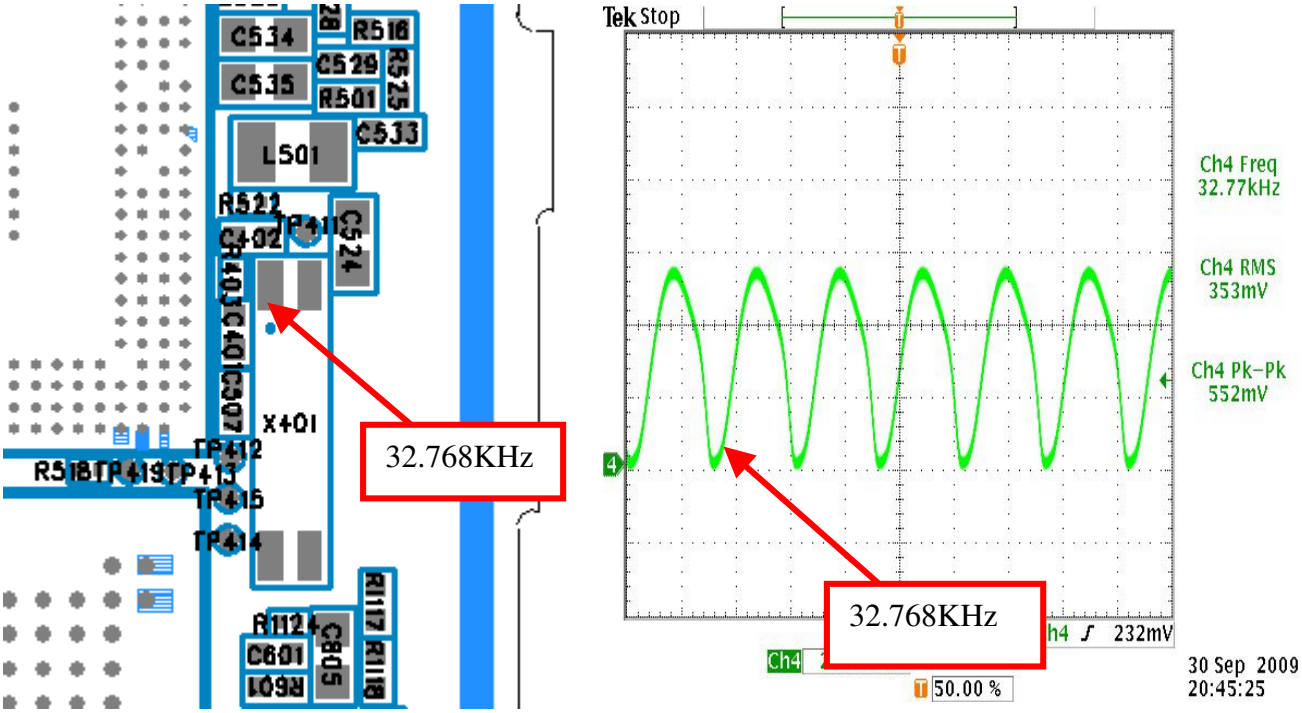


4.3.3 Checking Flow

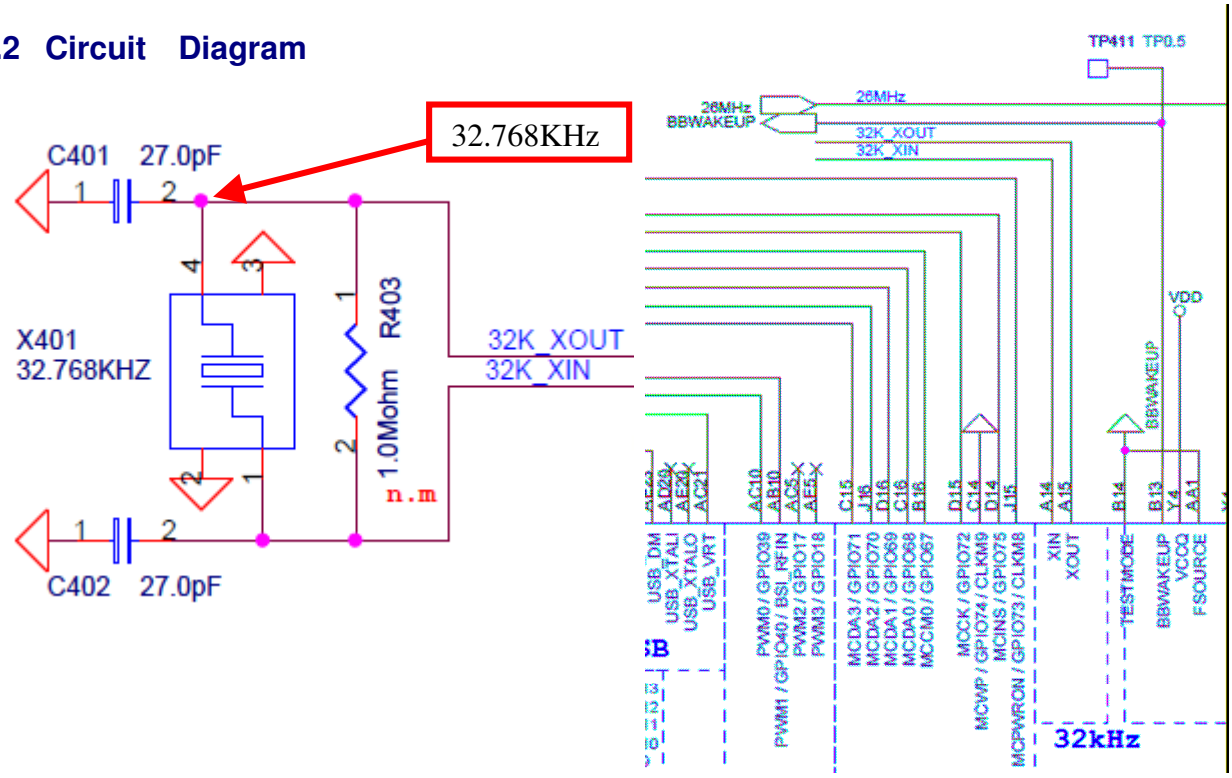


4.4 RTC Trouble

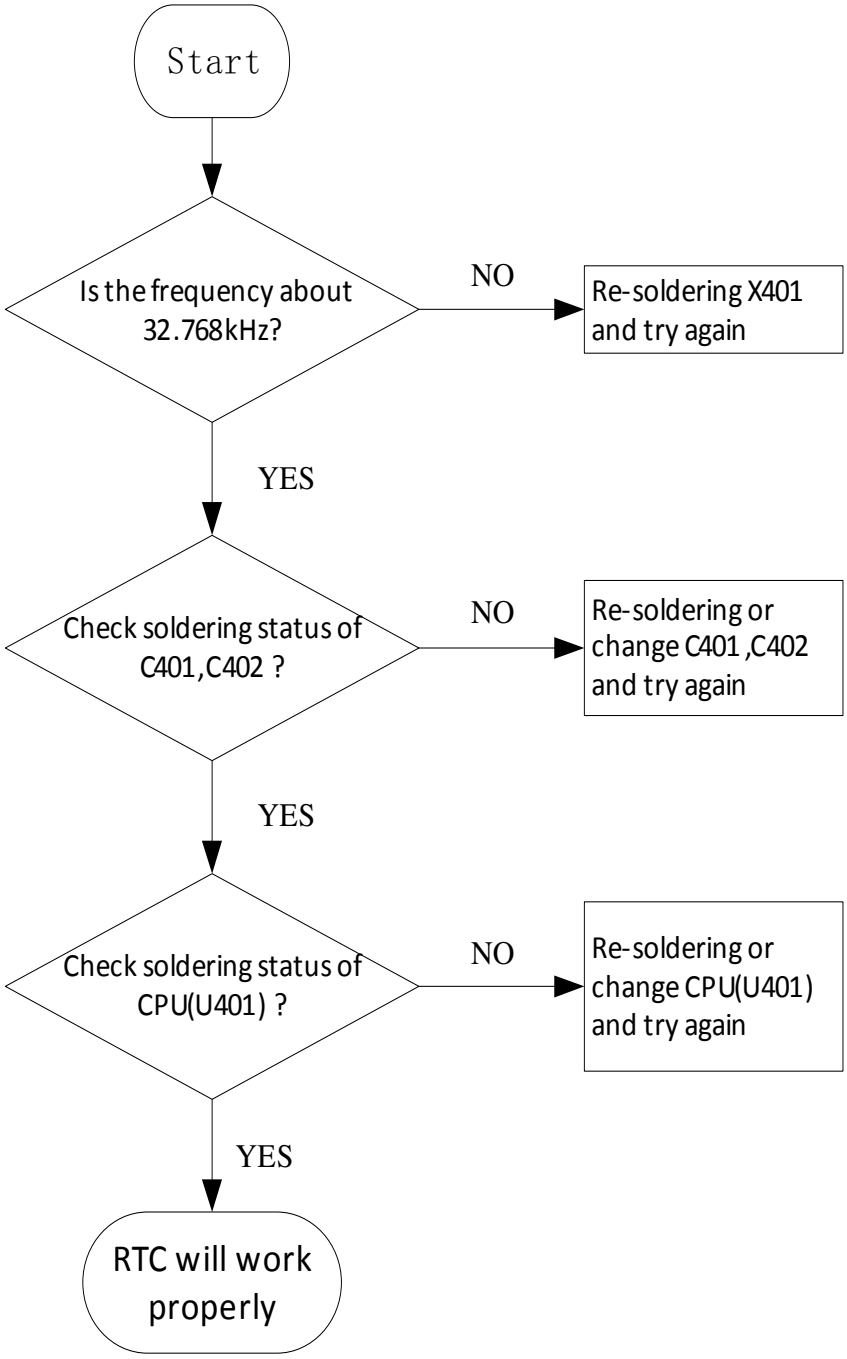
4.4.1 Test Point



4.4.2 Circuit Diagram

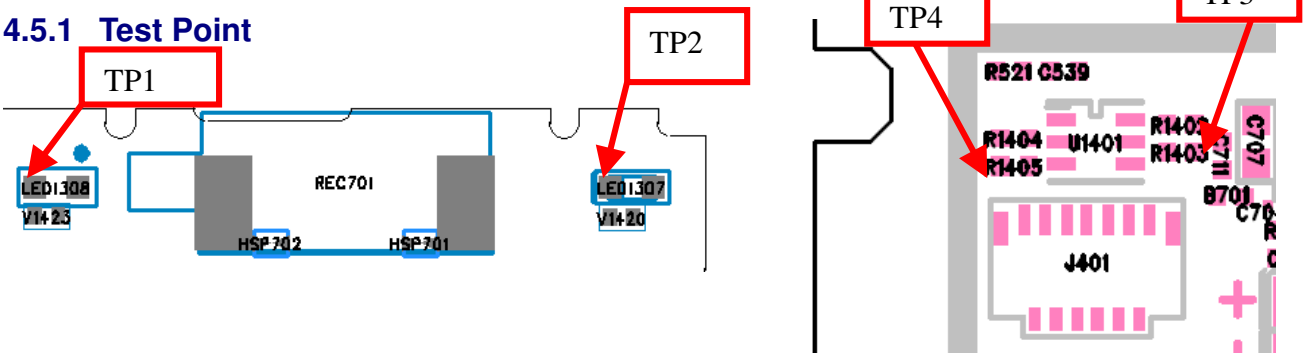


4.4.3 Checking Flow



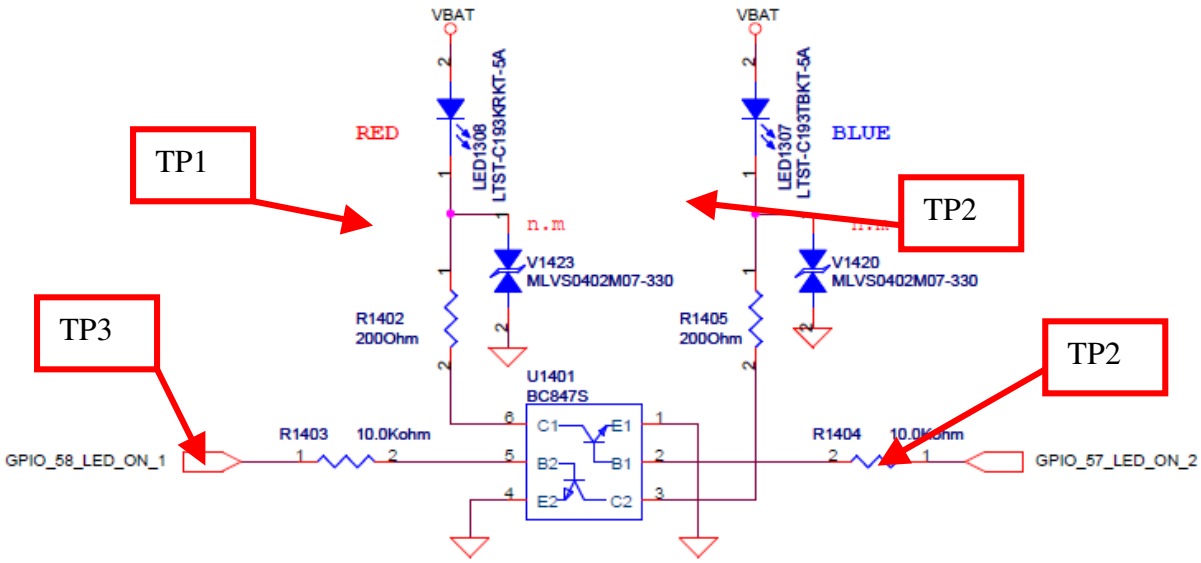
4.5 SIM1 SIM 2 LED Trouble

4.5.1 Test Point

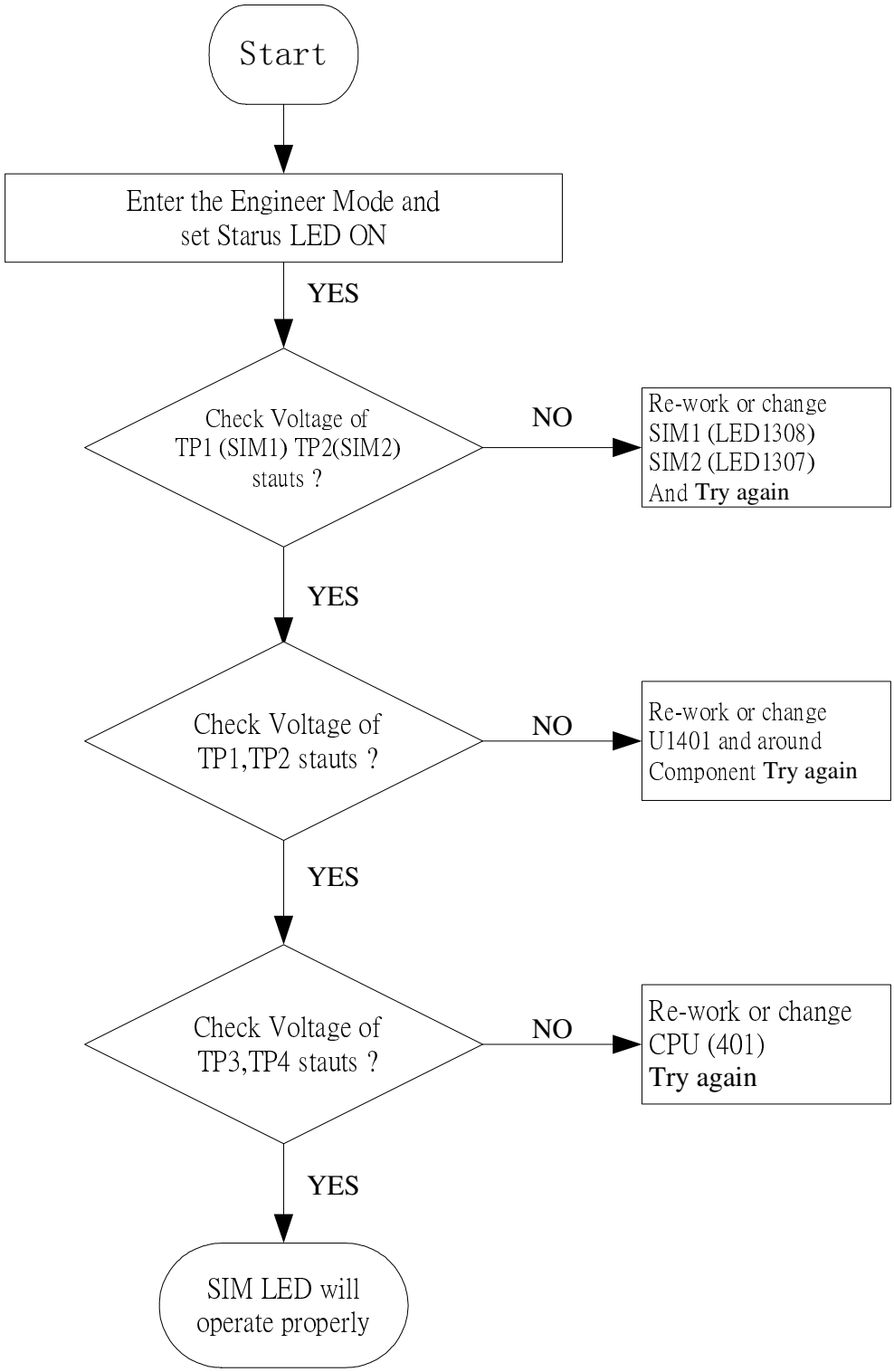


	Voltage	PART
SIM1 LED1308.1	1.75V~2.0V	TP1(LED1308.1)
SIM2 LED1307.1	1.75V~2.0V	TP2(LED1307.1)
SIM1 R1403.1	2.8V	TP3(R1402.2)
SIM2 R1404.1	2.8V	TP4(R1405.2)

4.5.2 Circuit Diagram

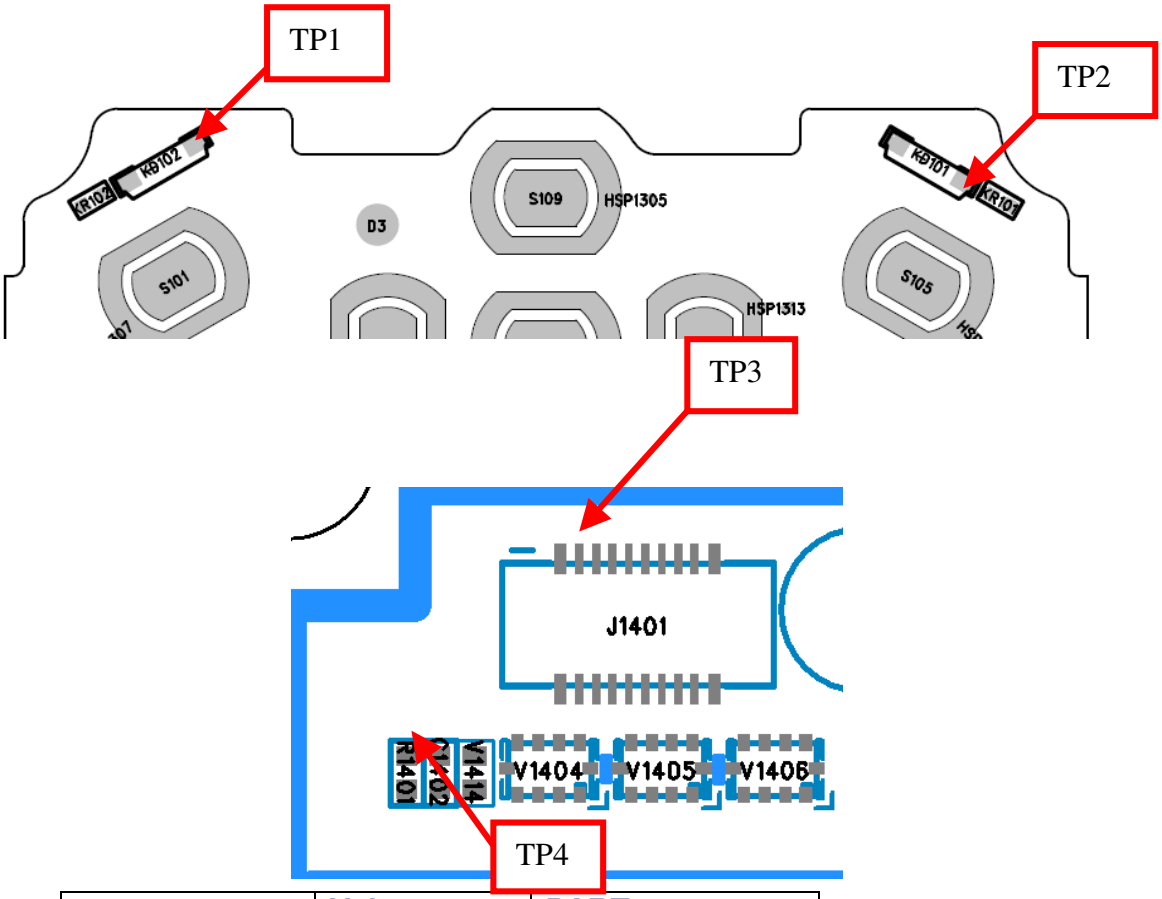


4.5.3 Checking Flow



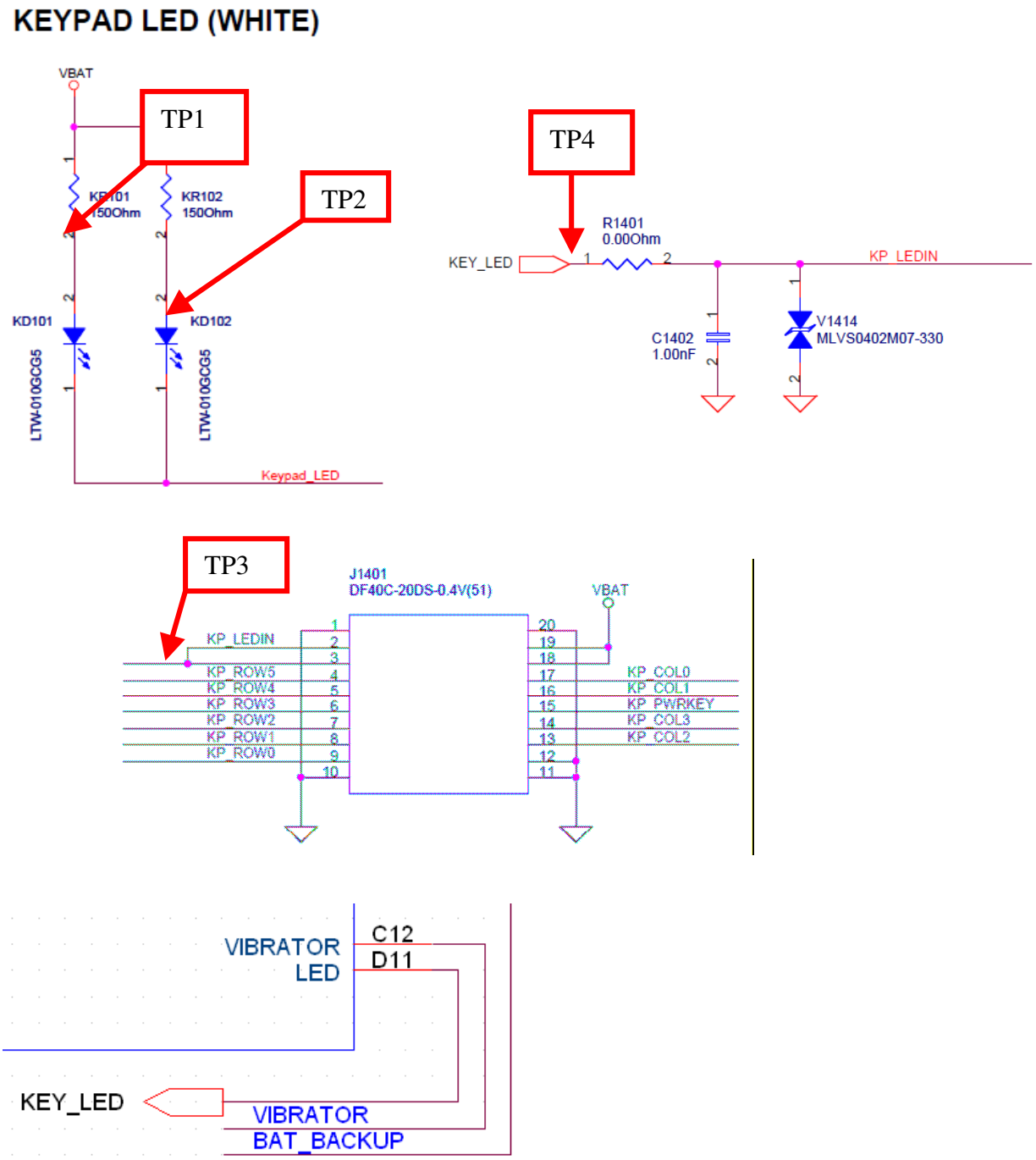
4.6 Sub Key LED backlight Trouble

4.6.1 Test Point

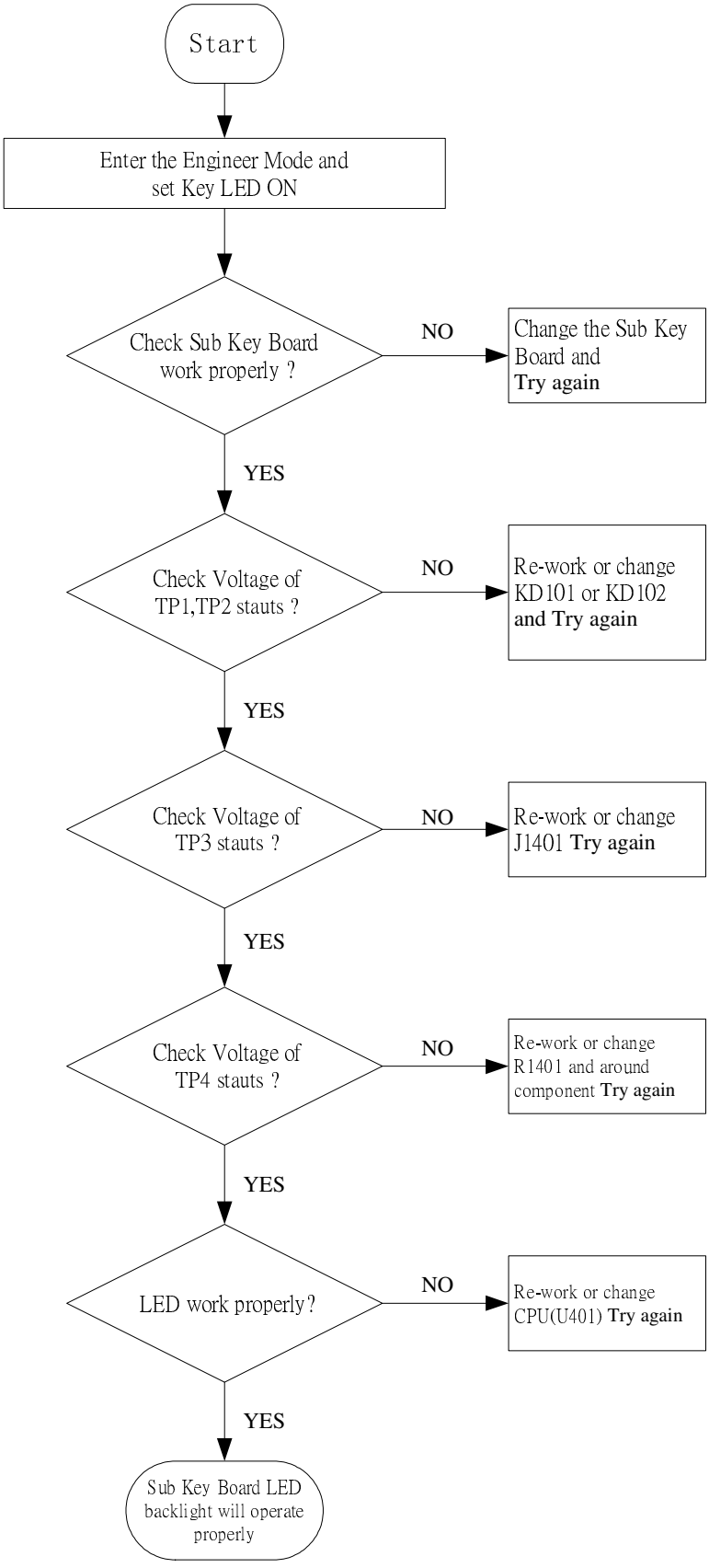


	Voltage	PART
KD101.2	2.6~2.9 V	TP1(KD101.2)
KD102.2	2.6~2.9V	TP2(KD102.2)
KP_LEDIN	>0.2V	TP3(RJ1401.2)
KEY_LED	>0.2V	TP4(R1401.1)

4.6.2 Circuit Diagram

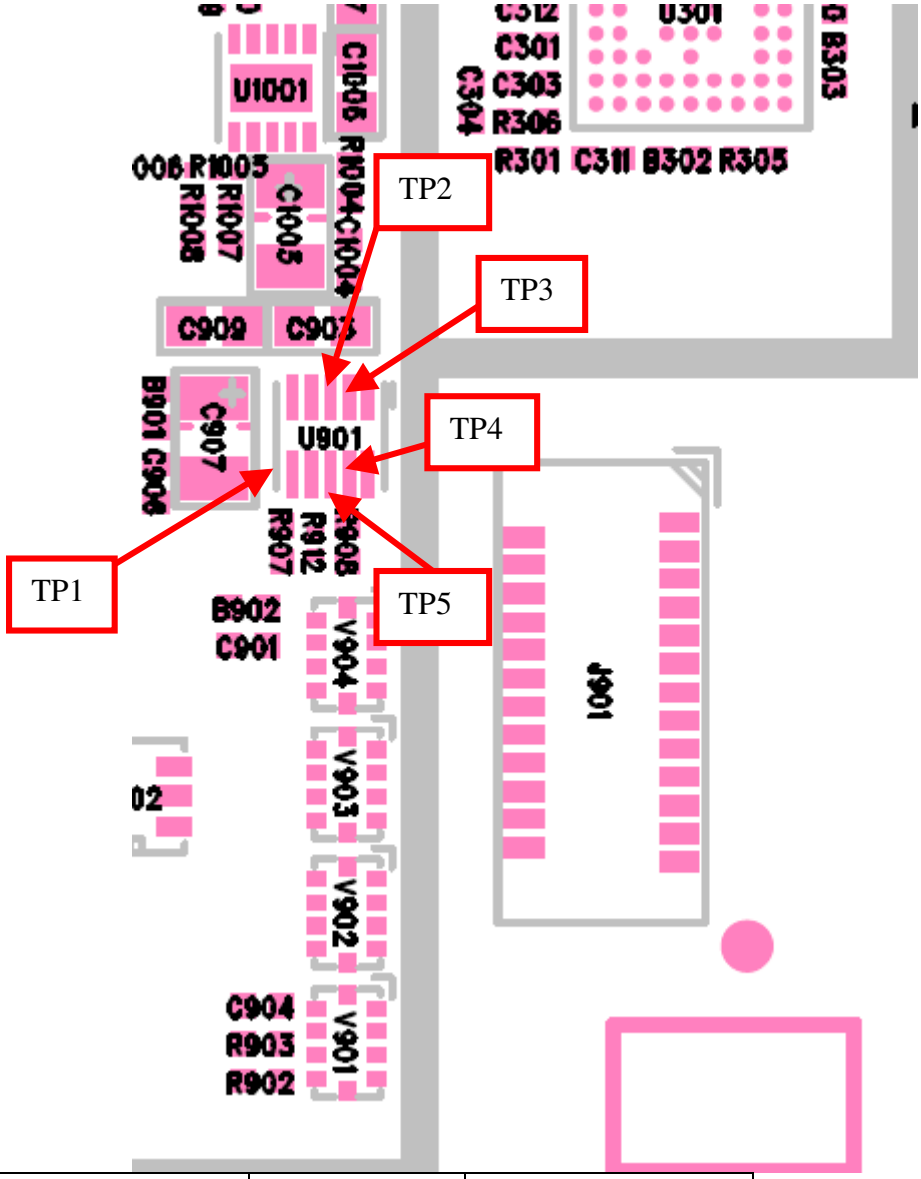


4.6.3 Checking Flow



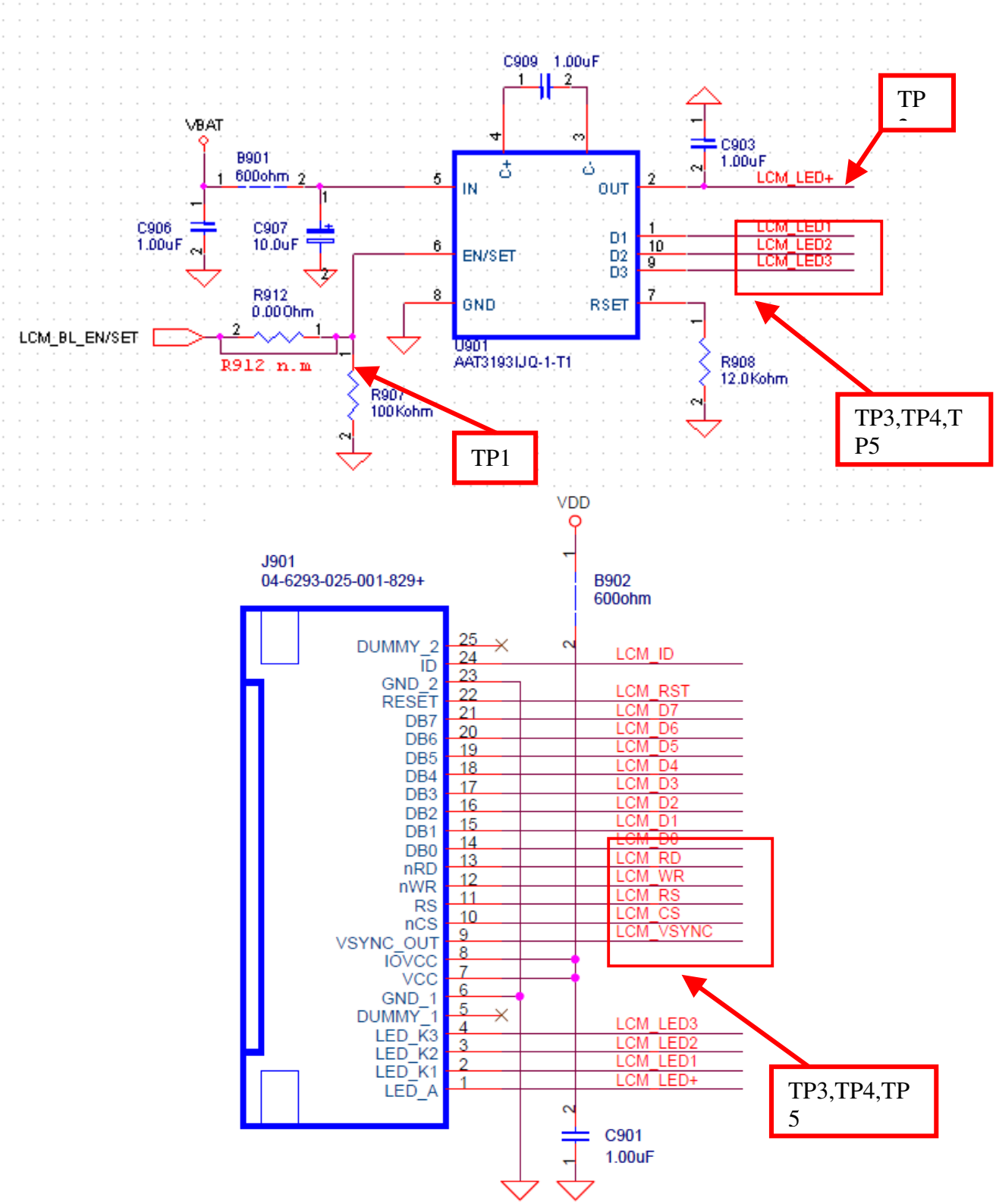
4.7 LCD Backlight Trouble

4.7.1 Test Point

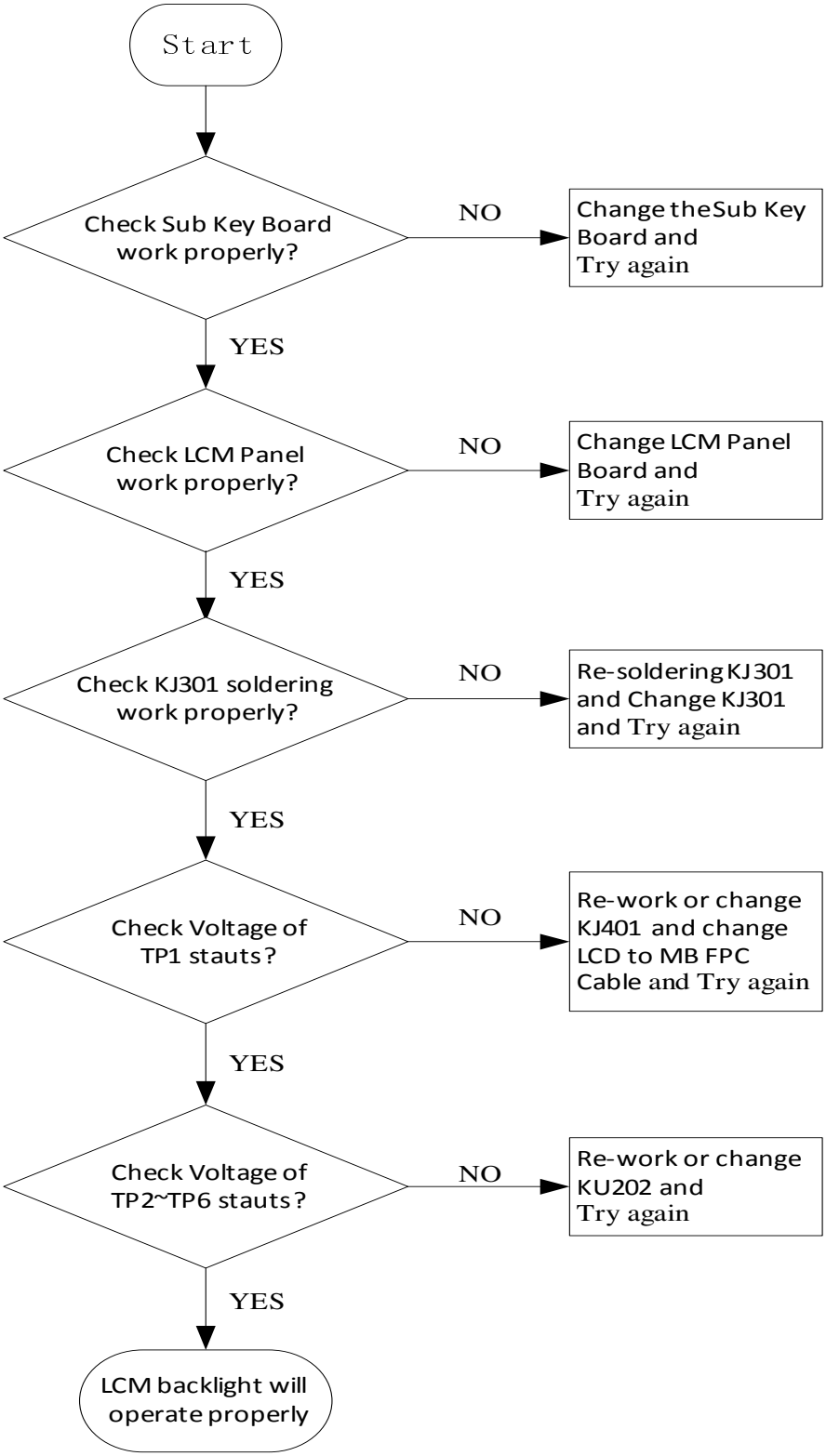


	Voltage	PART
LCM_BL_EN/SET	2.8V	TP1(R907.6)
LCM_LED+	3.5V~4.5V	TP2(U901.2)
LCM_LED1 LCM_LED1 LCM_LED1	0.7V~1.0V	TP3(U901.1) TP4(U901.10) TP5(U901.9))

4.7.2 Circuit Diagram

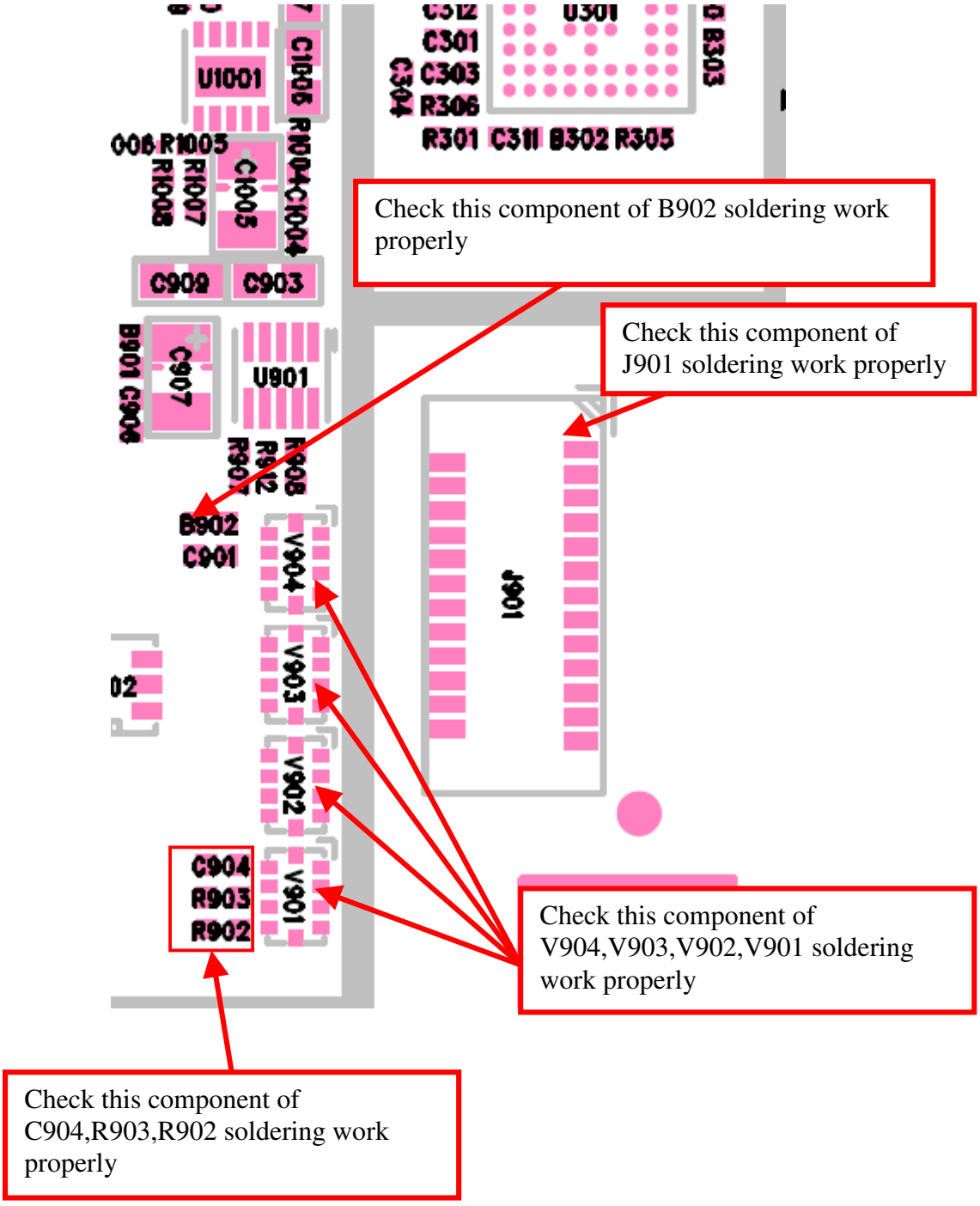


4.7.3 Checking Flow

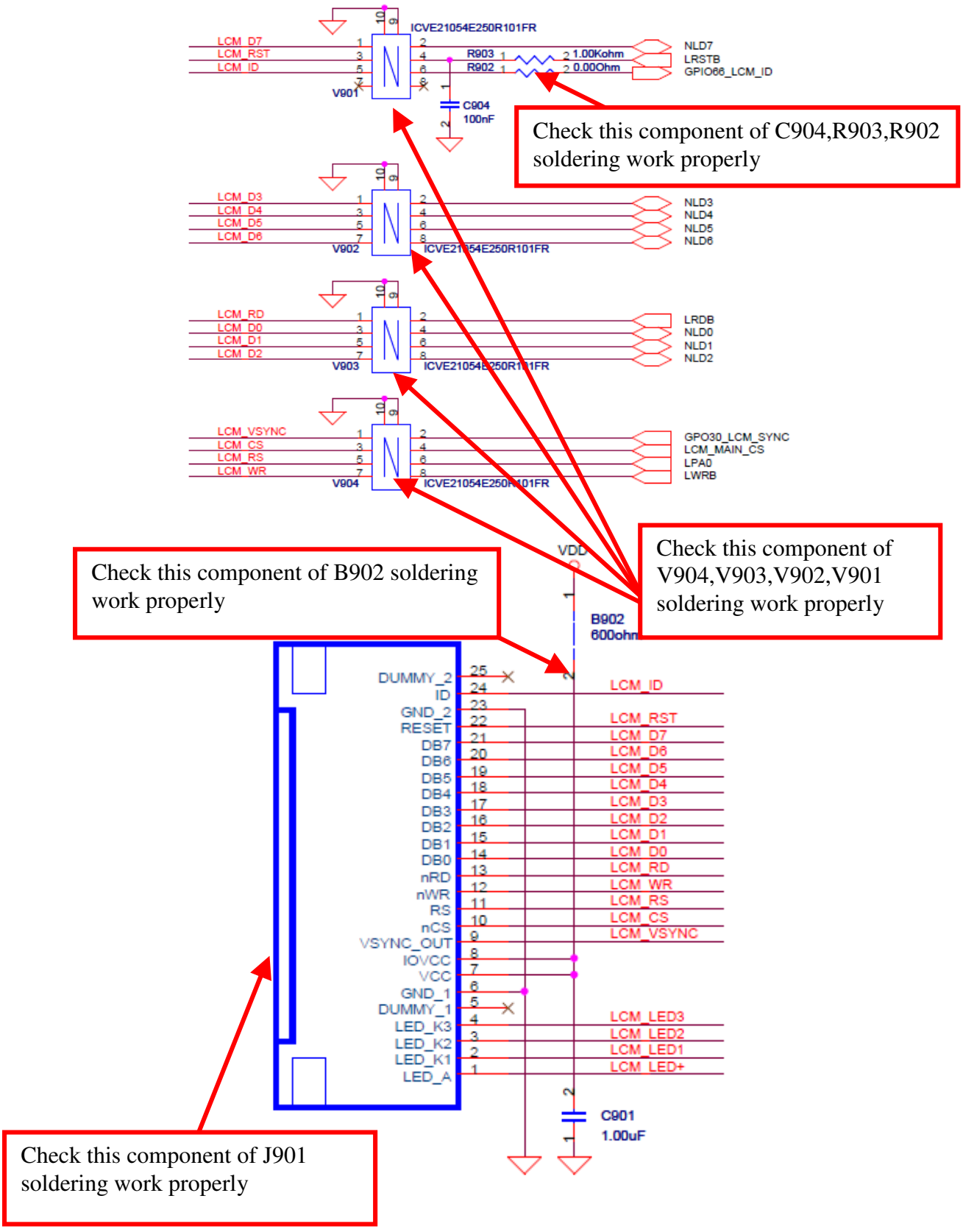


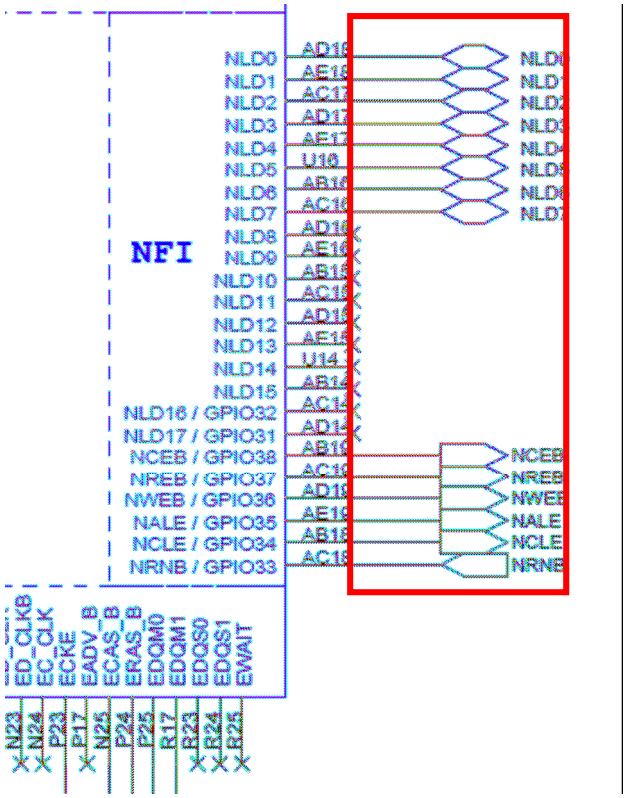
4.8 LCM Trouble

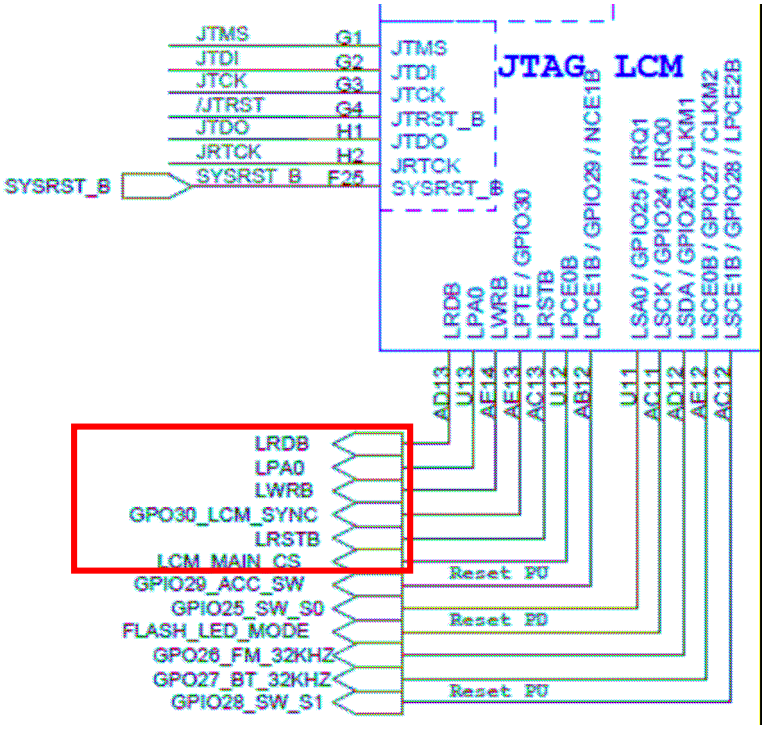
4.8.1 Test Point



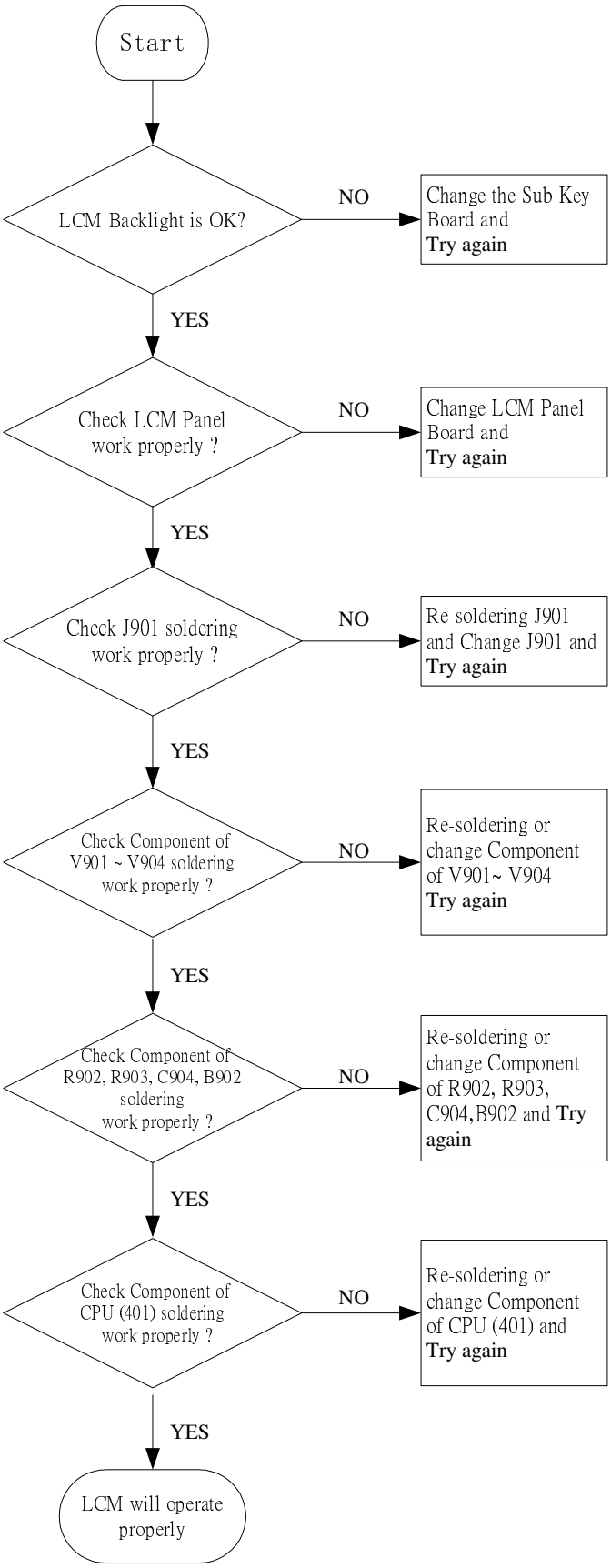
4.8.2 Circuit Diagram




NFI
NLD0
NLD1
NLD2
NLD3
NLD4
NLD5
NLD6
NLD7
NLD8
NLD9
NLD10
NLD11
NLD12
NLD13
NLD14
NLD15
NLD16 / GPIO32
NLD17 / GPIO31
NCEB / GPIO38
NREB / GPIO37
NWEB / GPIO36
NALE / GPIO35
NCLE / GPIO34
NRNB / GPIO33
ED_CLKB
EC_CLK
ECKE
EADV_B
ECAS_B
ERAS_B
EDQM0
EDQM1
EDQS0
EDQS1
EWAIT
N23
N24
P23
P17
N25
P24
P25
R17
R23
R24
R25

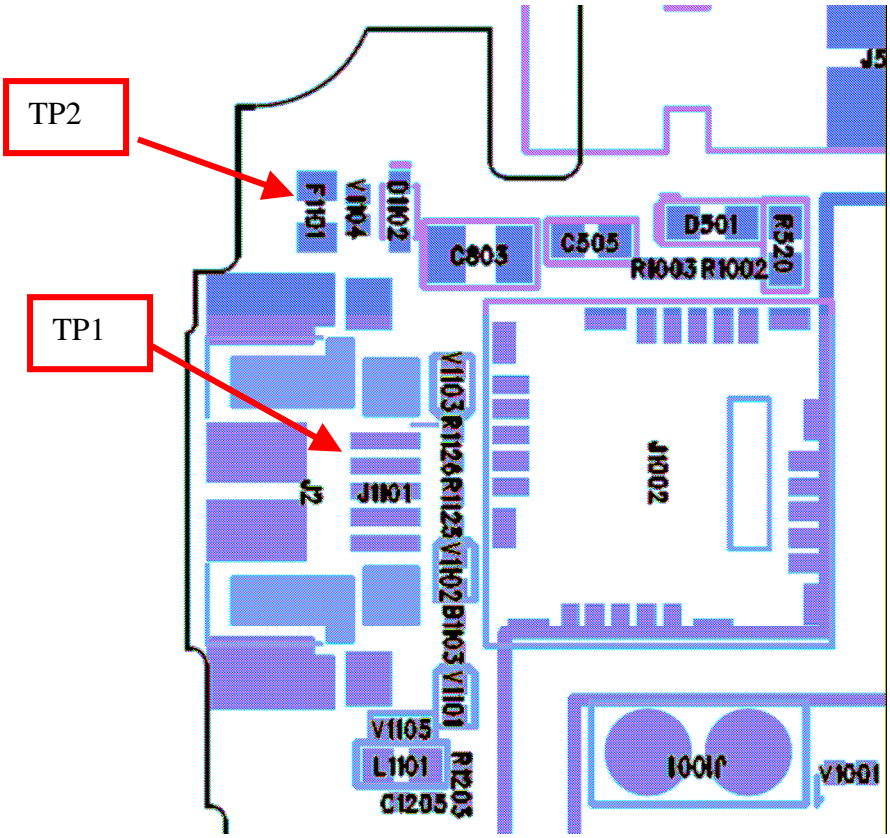

JTAG_LCM
JTMS
JTDI
JTCK
/JTRST
JTDO
JRTCK
SYSRST_B
G1
G2
G3
G4
H1
H2
F25
JTRST_B
LRDB
LPA0
LWRB
LPTE / GPIO30
LRSTB
LPCE0B
LPCE1B / GPIO29 / NCE1B
LSA0 / GPIO25 / IRQ1
LSCK / GPIO24 / IRQ0
LSDA / GPIO26 / CLKM1
LSCE0B / GPIO27 / CLKM2
LSCE1B / GPIO28 / LPCE2B
AD13
U13
AE14
AE13
AC13
U12
AB12
U11
AC11
AD12
AE12
AC12
GPO30_LCM_SYNC
LCM_MAIN_CS
GPIO29_ACC_SW
GPIO25_SW_S0
FLASH_LED_MODE
GPO26_FM_32KHZ
GPO27_BT_32KHZ
GPIO28_SW_S1
Reset PU
Reset PD
Reset PU

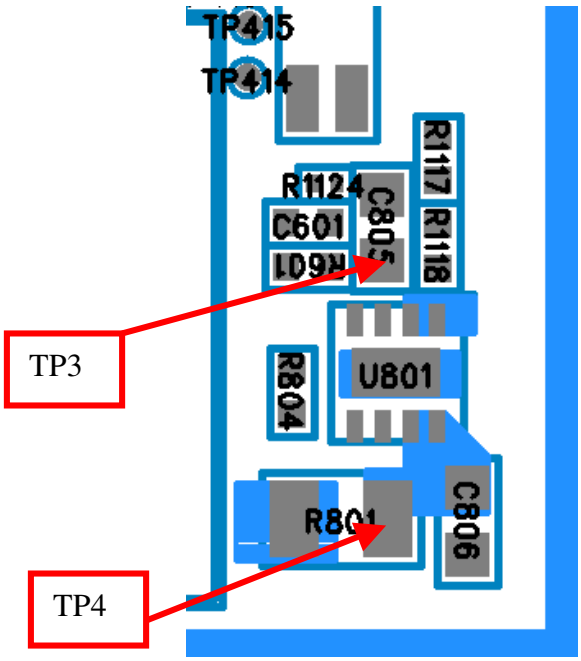
4.8.3 Checking Flow

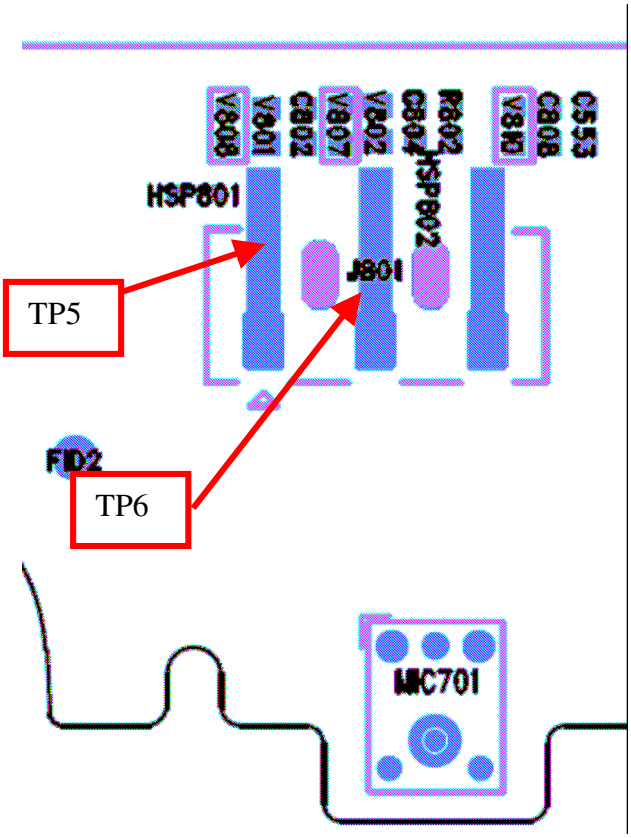


4.9 Charging Trouble

4.9.1 Test Point

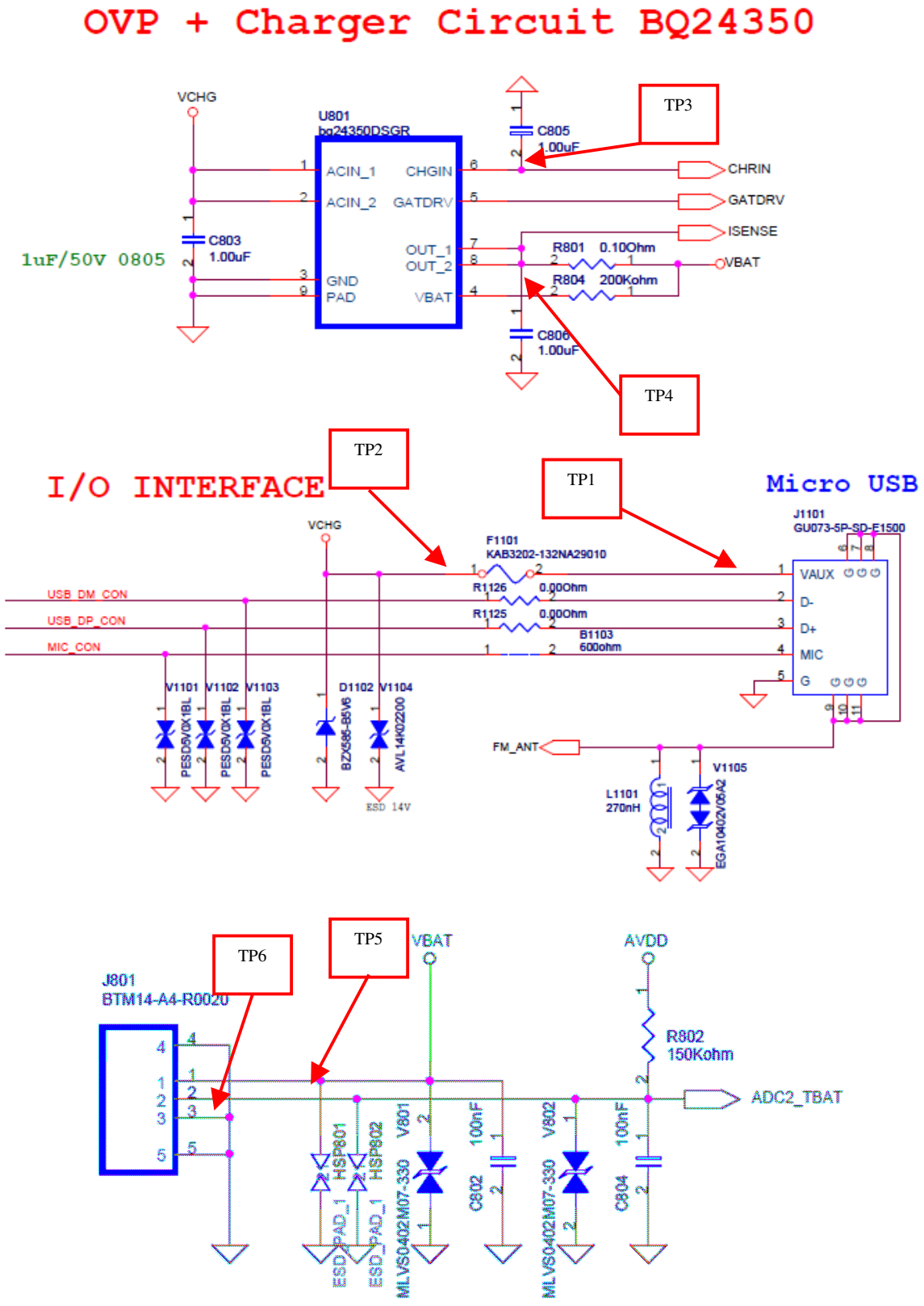




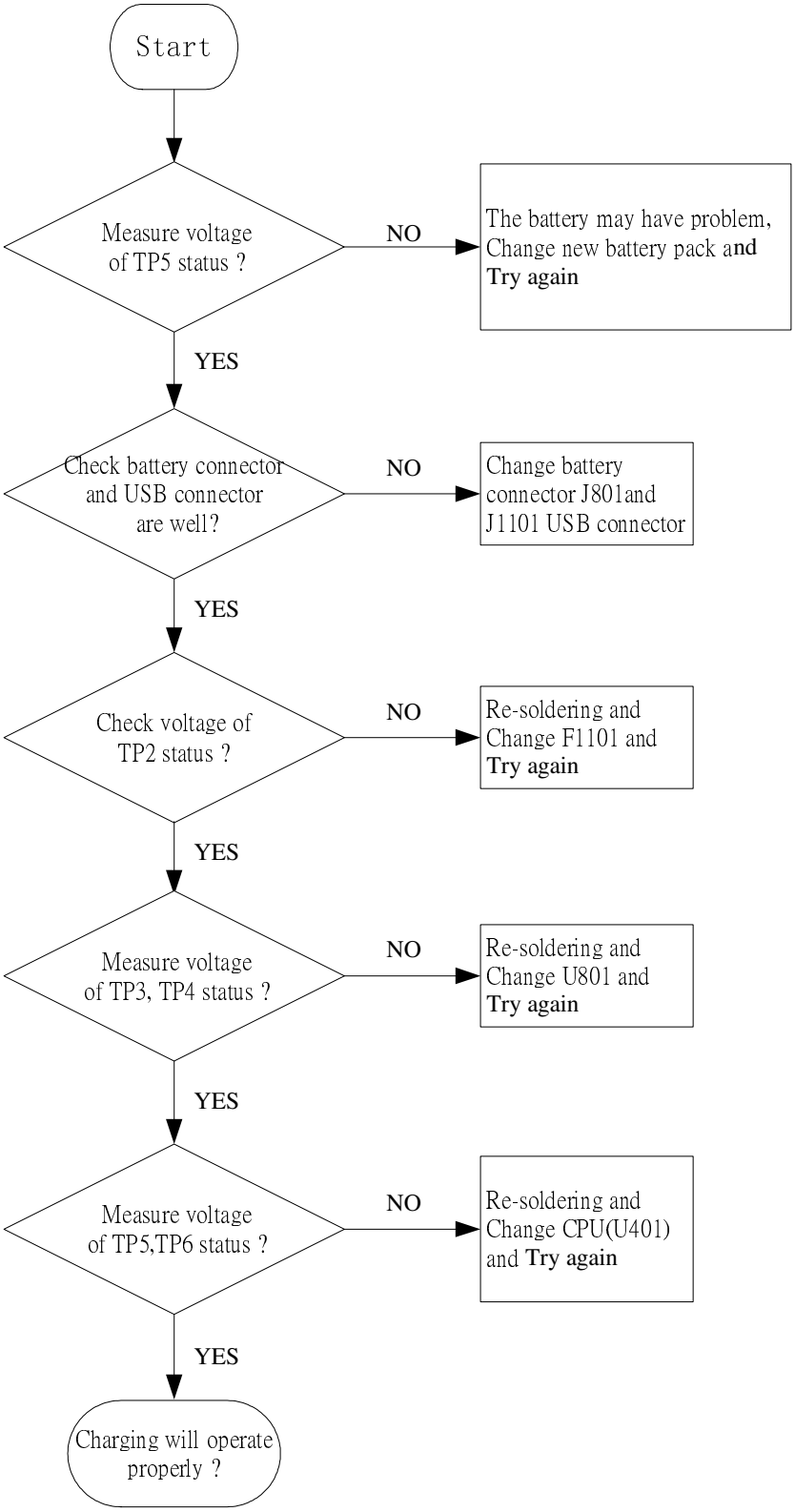


	Voltage	PART
J1101.1	4.6V~5.7V	TP1(J1101.1)
F1101.1	4.6V~5.7V	TP2(F1101.1)
C805.2	4.5V~5.6V	TP3(C805.2)
R801.2	2.4V~4.2V (very close to battery voltage)	TP4(R801.2)
J801.1	2.4V~4.2V (battery voltage)	TP5(J801.1)
J801.2	0.4V~1.5V	TP6(J801.2)

4.9.2 Circuit Diagram

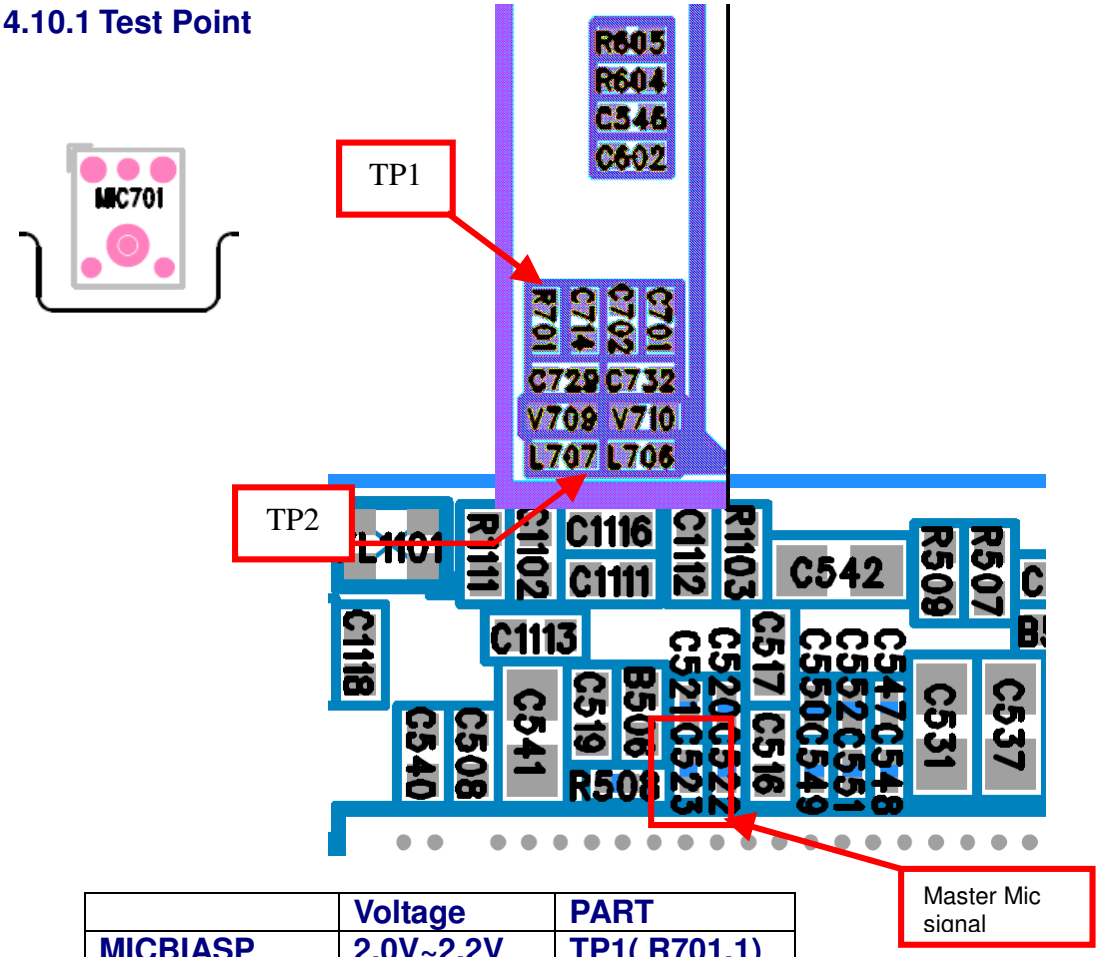


4.9.3 Checking Flow



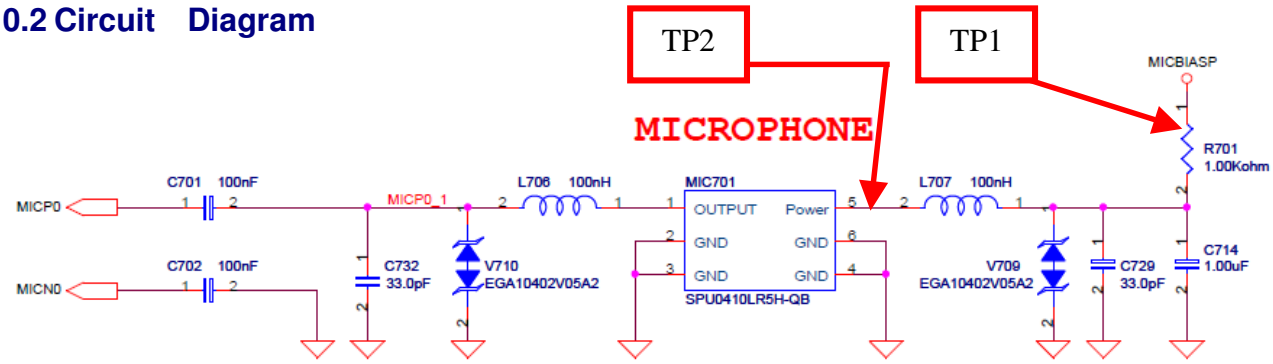
4.10 Master Microphone Trouble

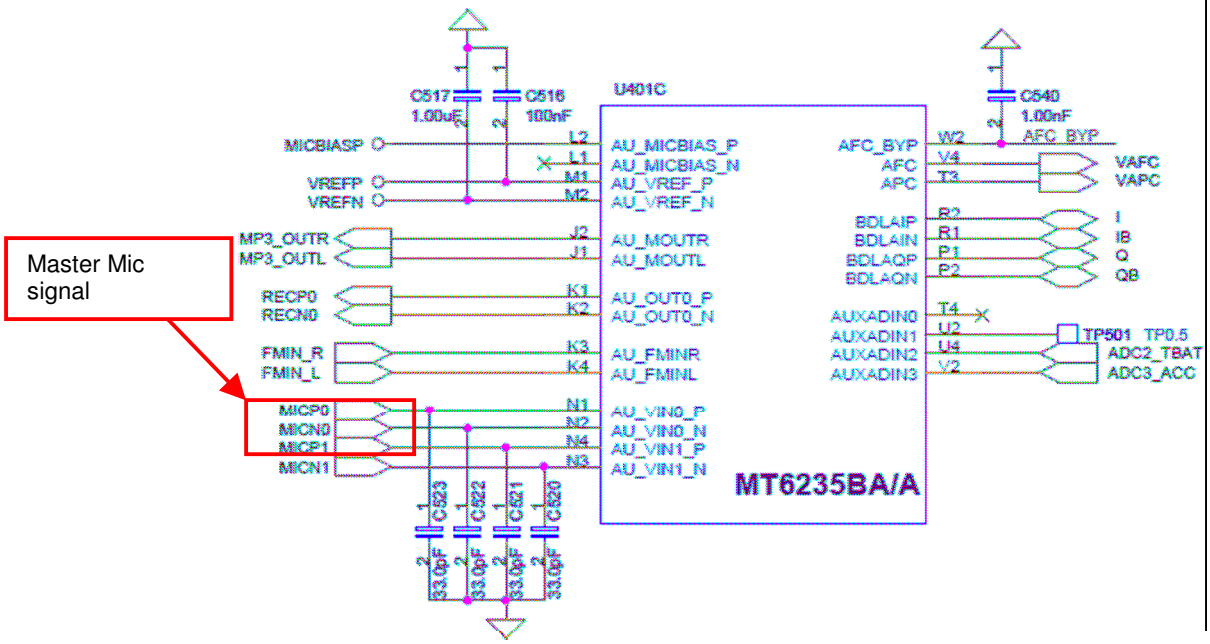
4.10.1 Test Point



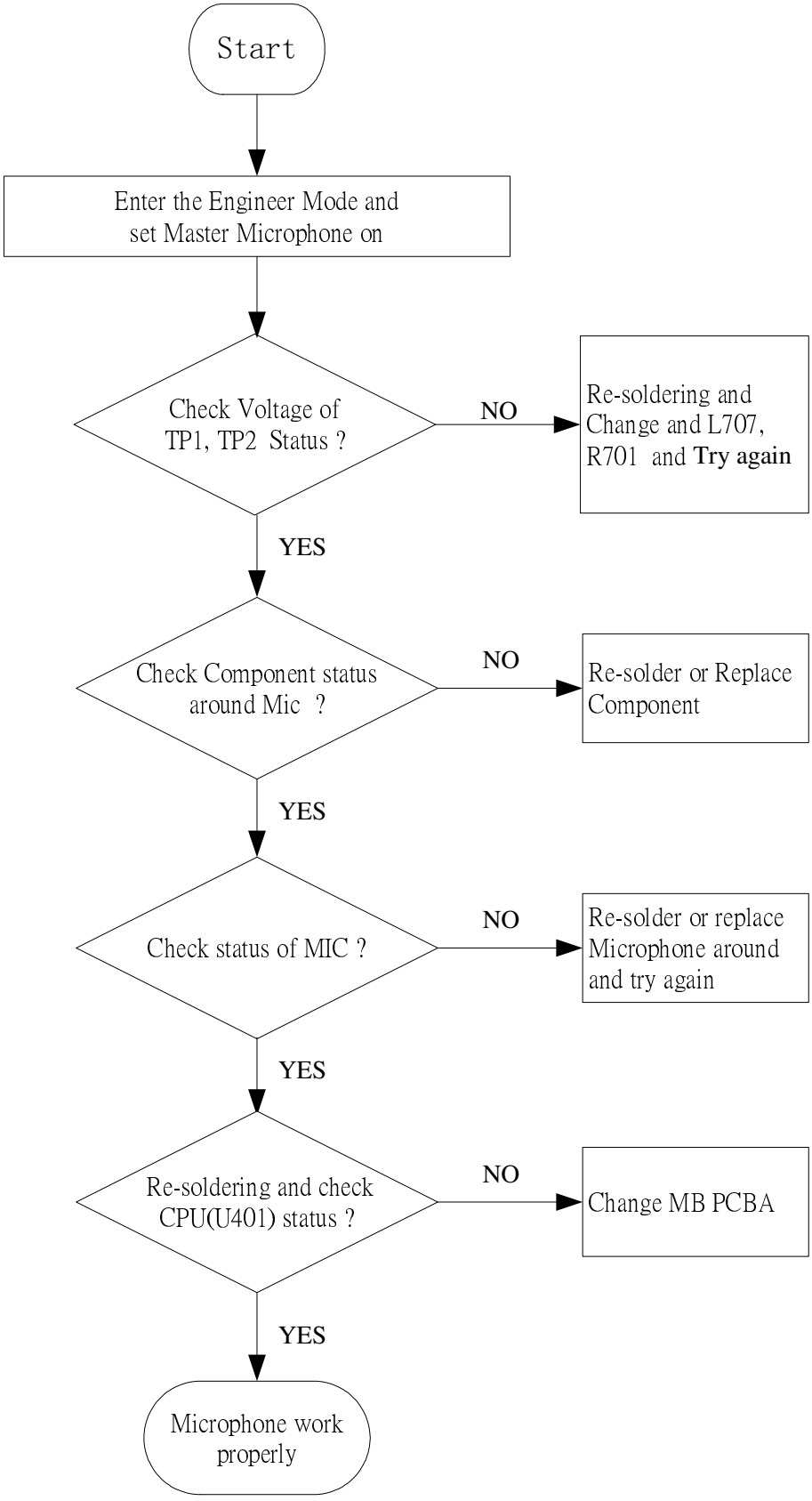
	Voltage	PART
MICBIASP	2.0V~2.2V	TP1(R701.1)
L707.2	1.8V~2.0V	TP2(L707.2)

4.10.2 Circuit Diagram



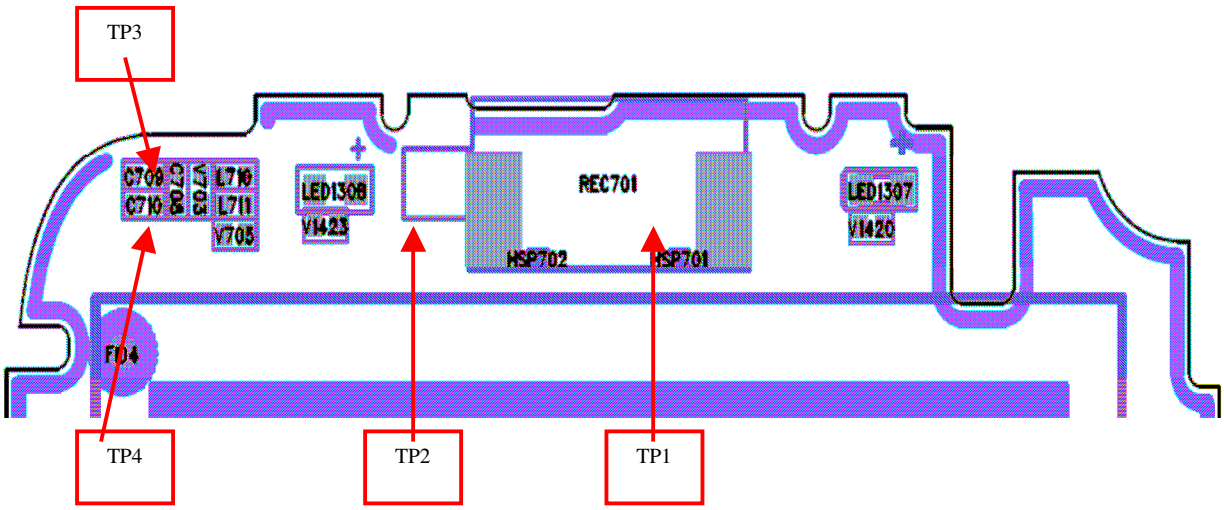

Master Mic signal
U401C
MT6235BA/A
C517
1.00uF
C516
100nF
C540
1.00nF
AFC_BYP
MICBIASP
VREFP
VREFN
MP3_OUTR
MP3_OUTL
RECP0
RECN0
FMIN_R
FMIN_L
MICP0
MICN0
MICP1
MICN1
AU_MICBIAS_P
AU_MICBIAS_N
AU_VREF_P
AU_VREF_N
AU_MOUTR
AU_MOUTL
AU_OUT0_P
AU_OUT0_N
AU_FMINR
AU_FMINL
AU_VIN0_P
AU_VIN0_N
AU_VIN1_P
AU_VIN1_N
C523
C522
C521
C520
33.0pF
AFC_BYP
AFC
APC
VAFC
VAPC
BDLAIP
BDLAIN
BDLAQP
BDLAQN
I
IB
Q
QB
AUXADIN0
AUXADIN1
AUXADIN2
AUXADIN3
TP501 TP0.5
ADC2_TBAT
ADC3_ACC

4.10.3 Checking Flow



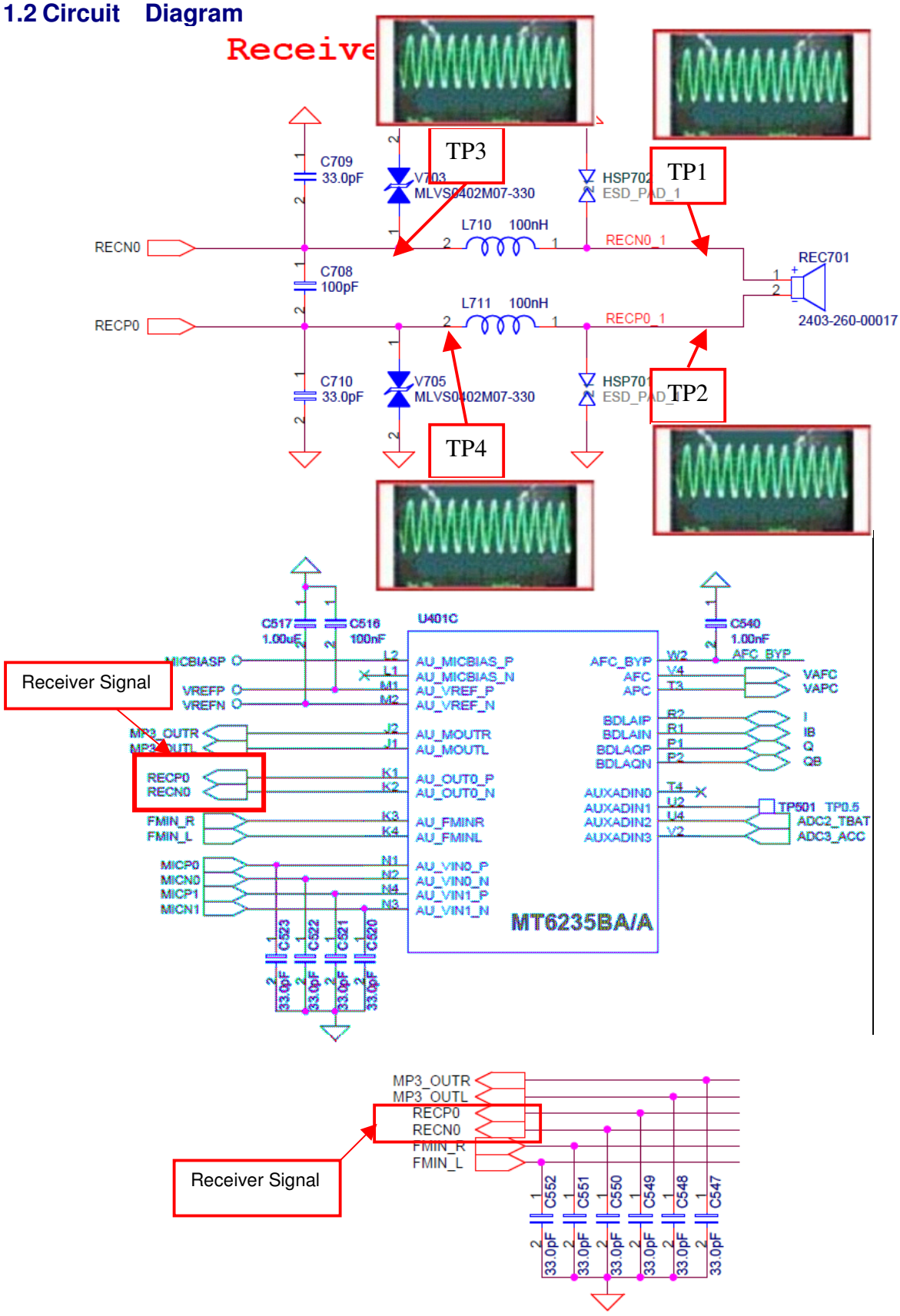
4.11 Receiver Trouble

4.11.1 Test Point

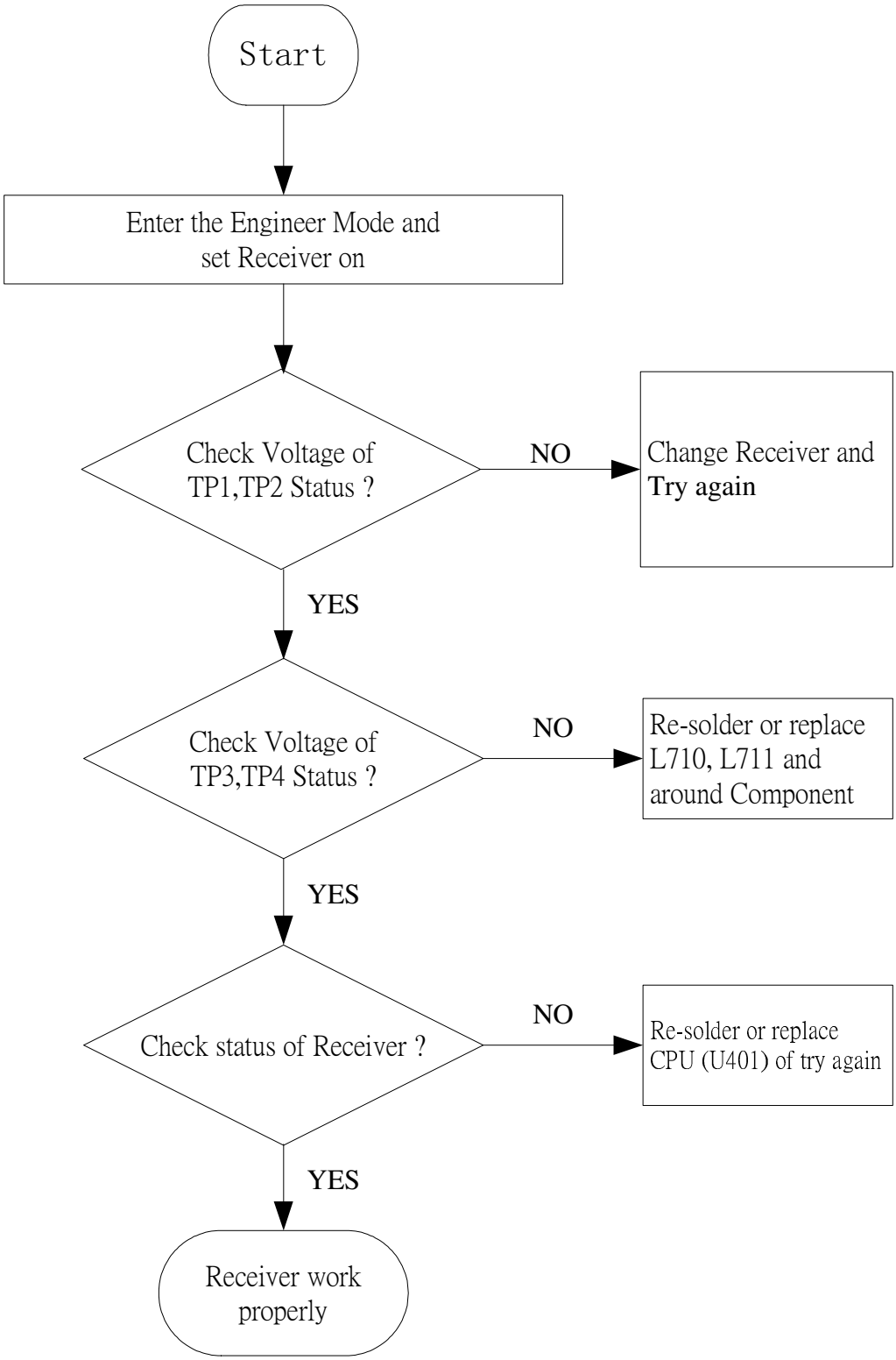


	Voltage	PART
REC701.1	1.3V~1.5V	TP1(REC701.1)
REC701.2	1.3V~1.5V	TP2(REC701.2)
L710.2	1.3V~1.5V	TP2(L710.2)
L711.2	1.3V~1.5V	TP2(L711.2)

4.11.2 Circuit Diagram



4.11.3 Checking Flow

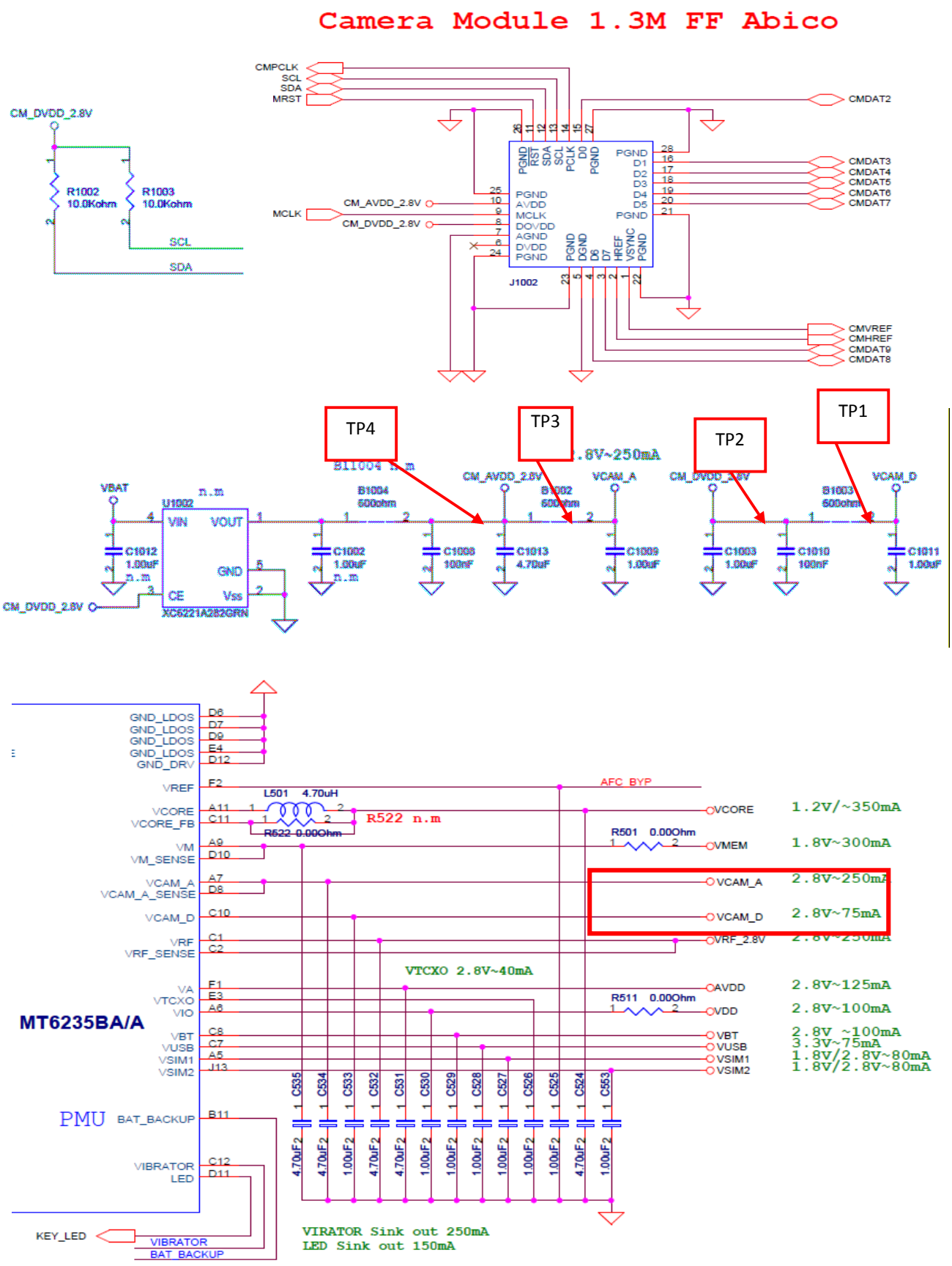


4.12 Camera Trouble

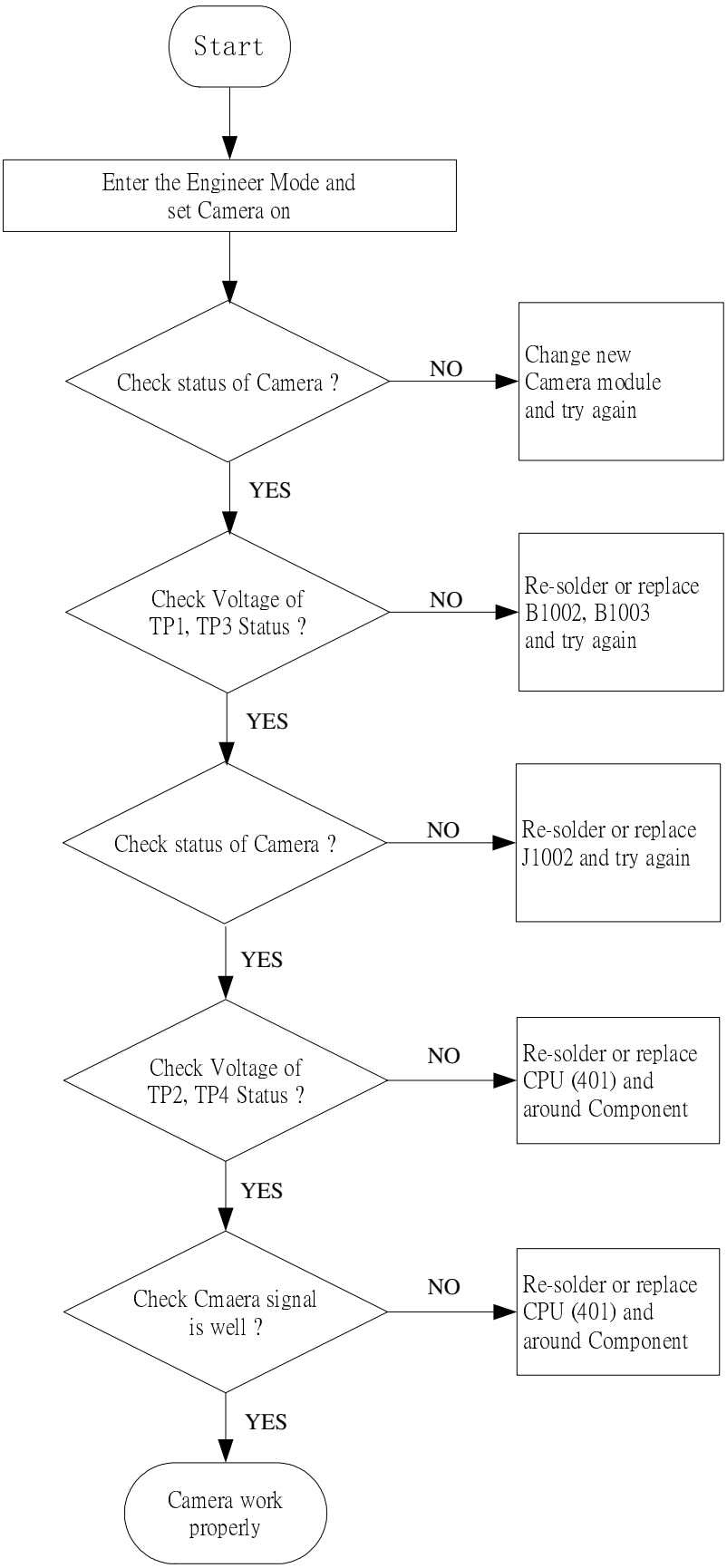
4.12.1 Test Point

	Voltage	PART
VCAM_D	2.8V	TP1(B1003.2)
CM_DVDD_2.8V	2.8V	TP2(B1003.1)
VCAM_A	2.8V	TP3(B1002.2)
CM_AVDD_2.8V	2.8V	TP4(B1002.1)

4.12.2 Circuit Diagram

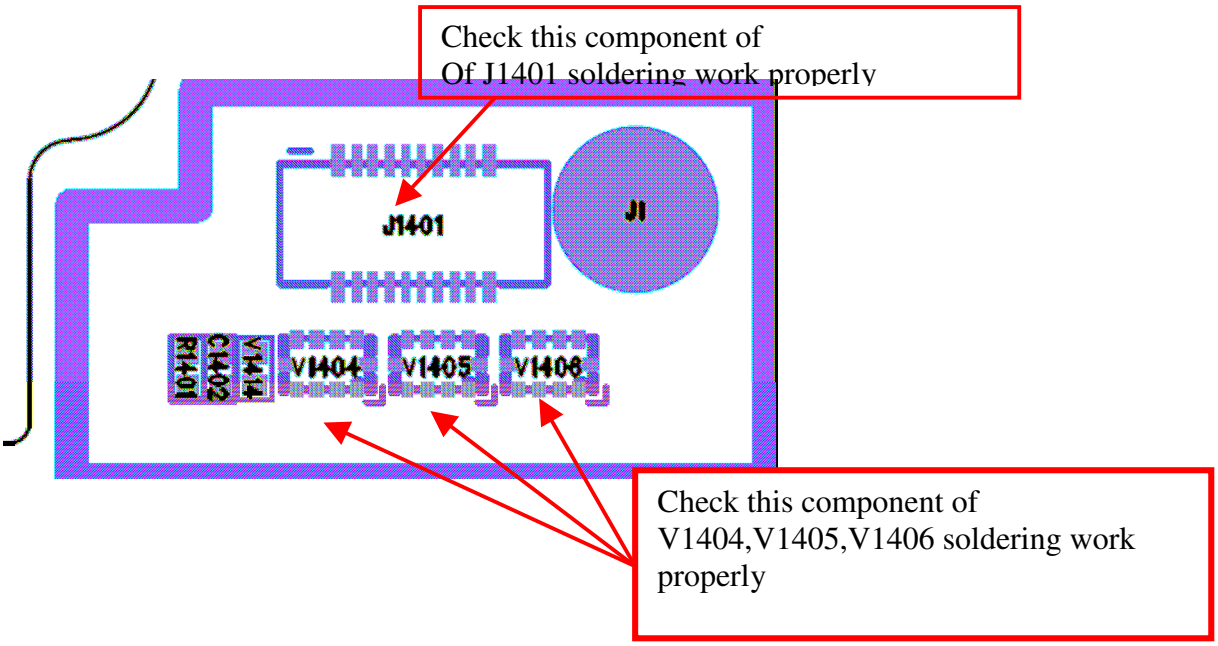


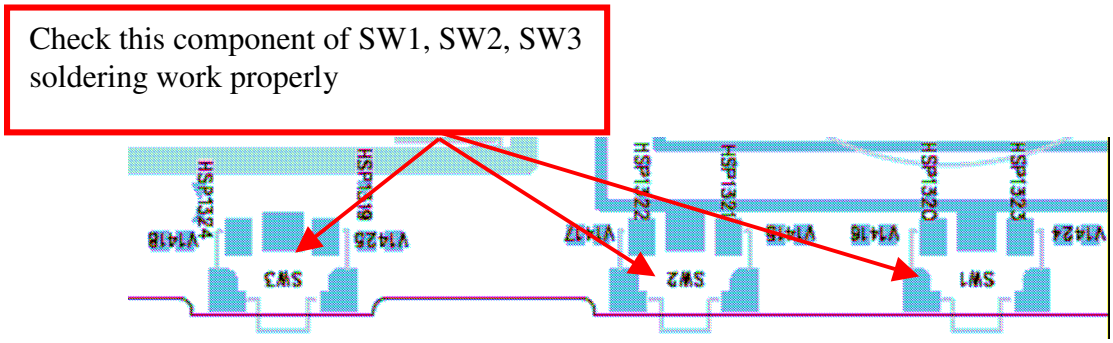
4.12.3 Checking Flow



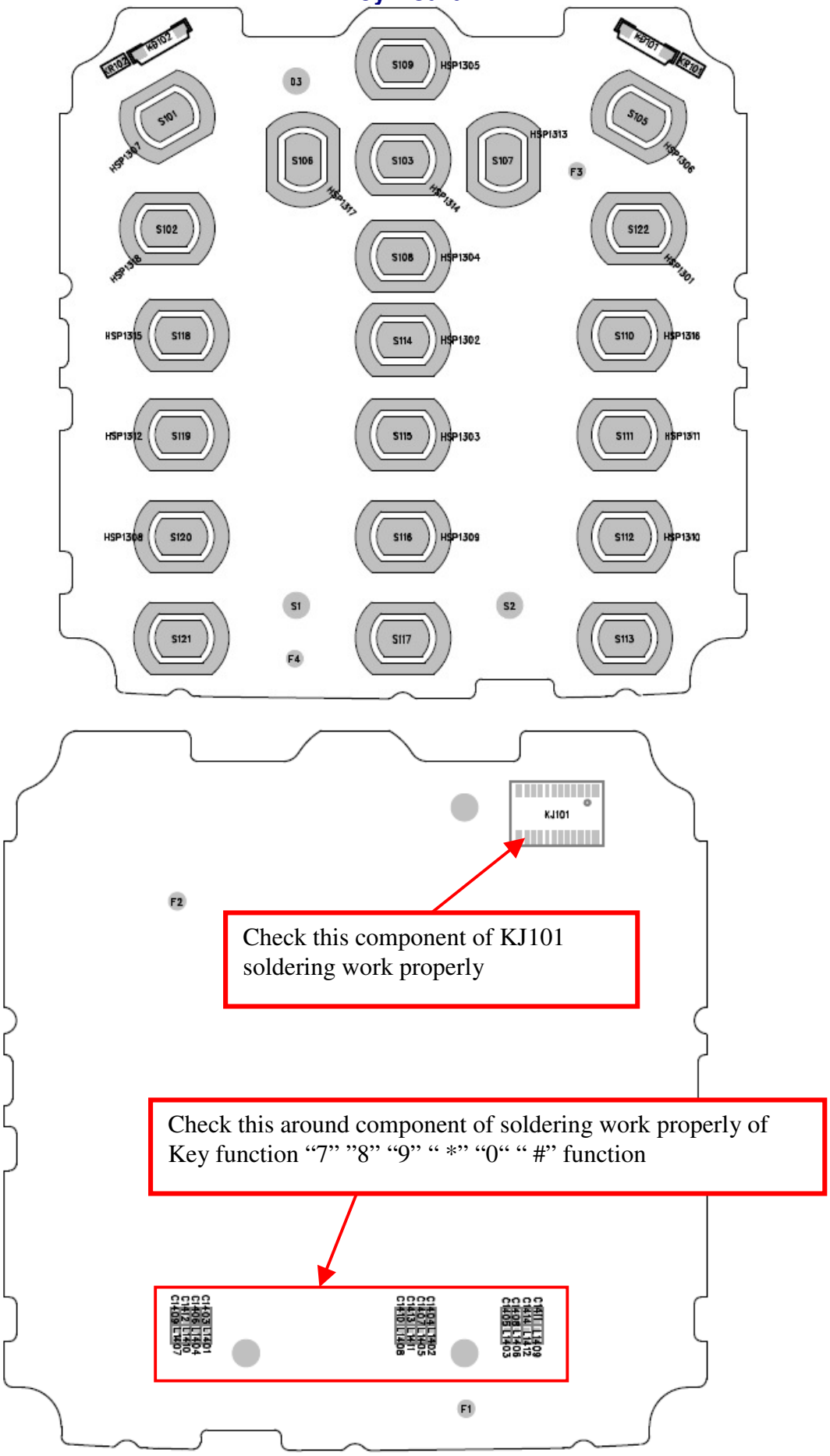
4.13 Key Board Trouble

4.13.1 Test Point



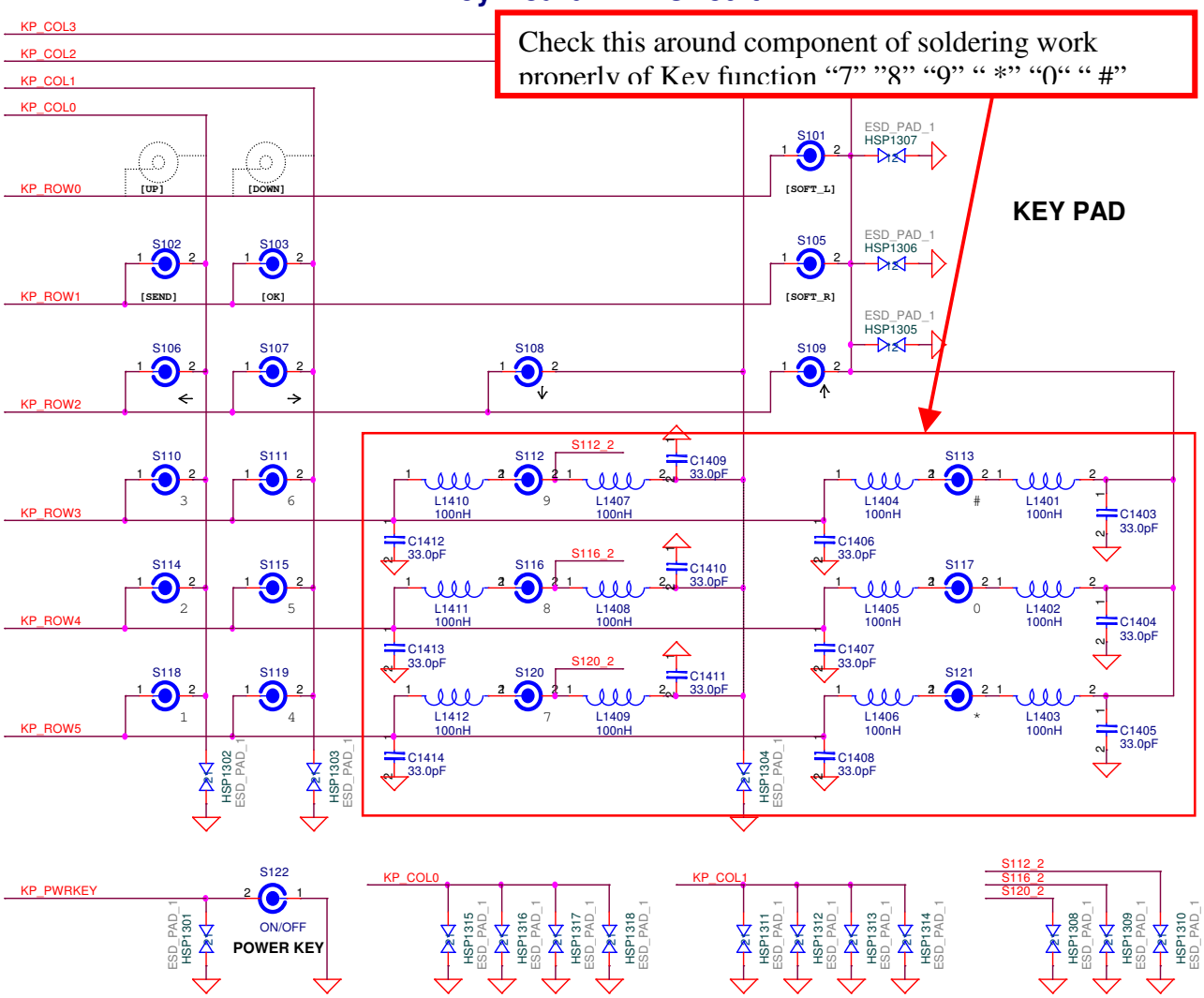


Key Board

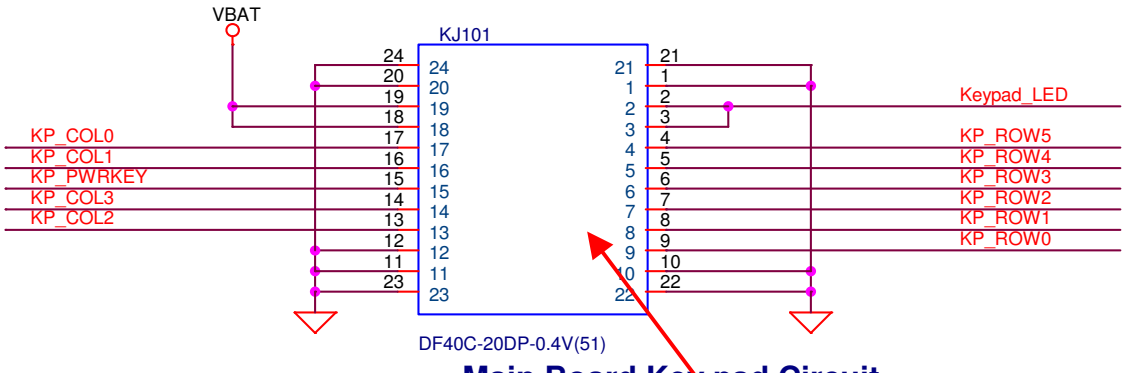

KR102
KR101
S109
HSP1305
S101
HSP1307
S106
S103
S107
HSP1313
S105
HSP1306
HSP1317
HSP1314
S102
HSP1318
S108
HSP1304
S122
HSP1301
HSP1315
S118
S114
HSP1302
S110
HSP1316
HSP1312
S119
S115
HSP1303
S111
HSP1311
HSP1308
S120
S116
HSP1309
S112
HSP1310
S121
S117
S113
KJ101
Check this component of KJ101 soldering work properly
Check this around component of soldering work properly of Key function “7” ”8” “9” “ *” “0“ “ #” function

4.13.2 Circuit Diagram

Key Board PAD Circuit

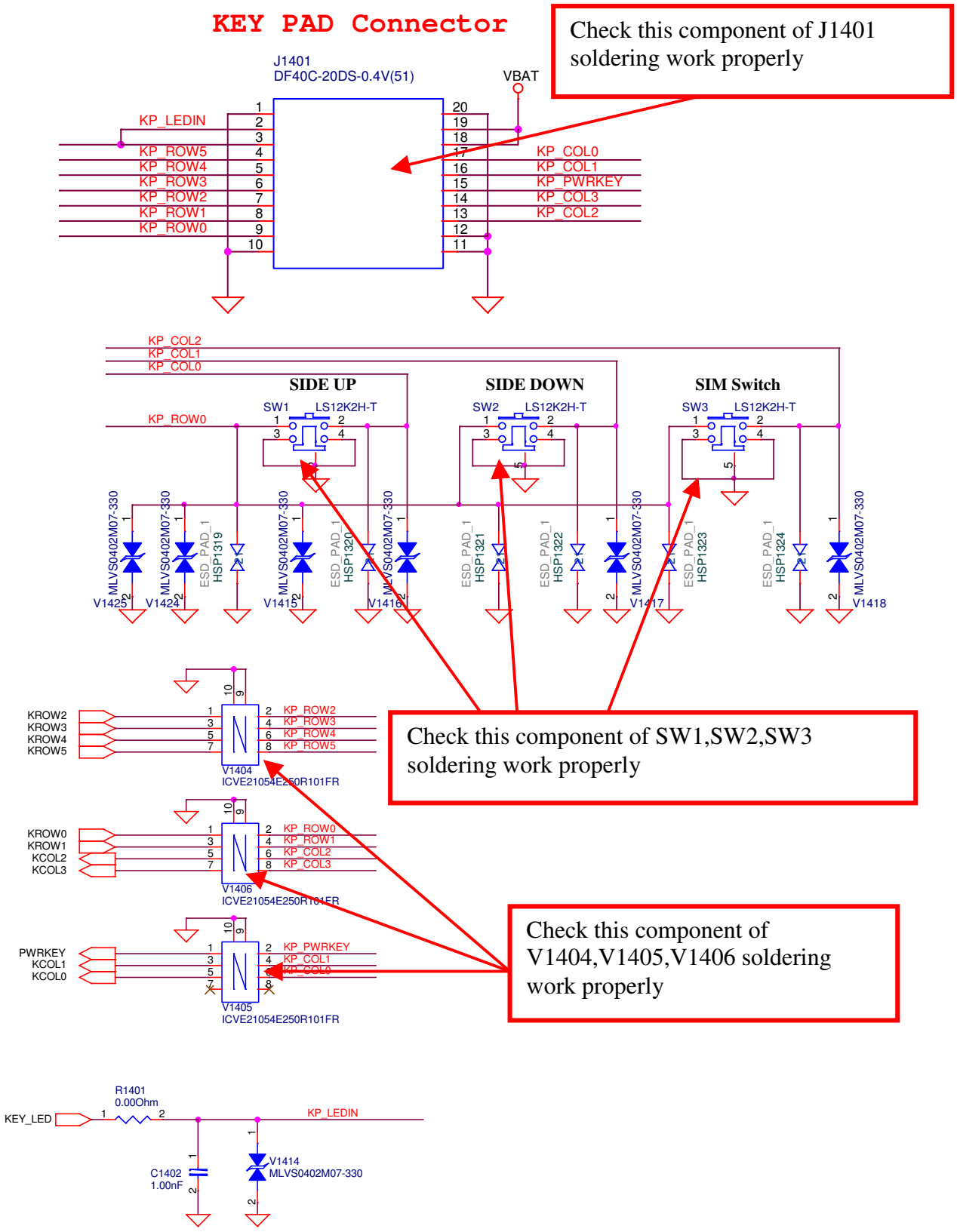


B to B connector

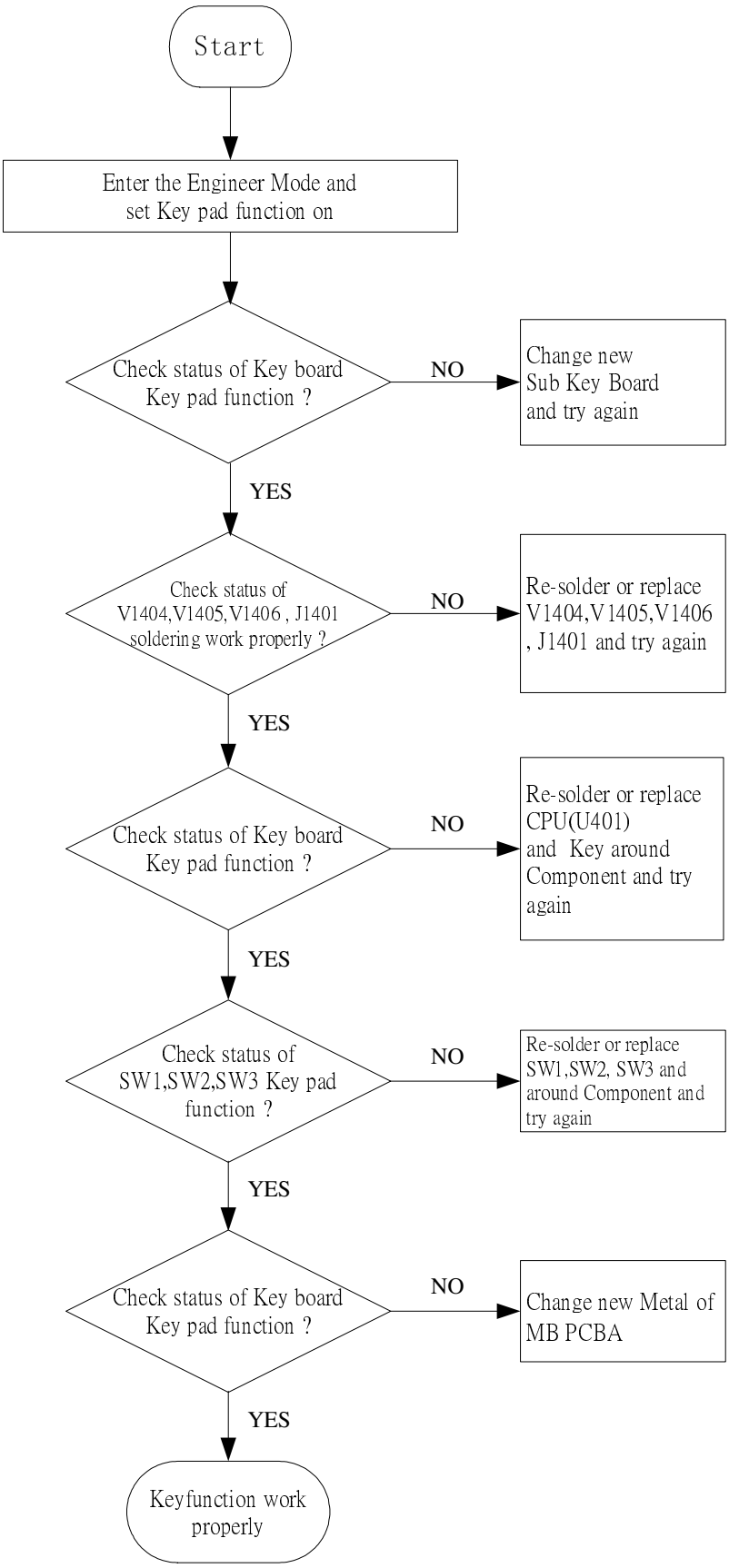


Main Board Key pad Circuit

Check this component of KJ101 soldering work properly

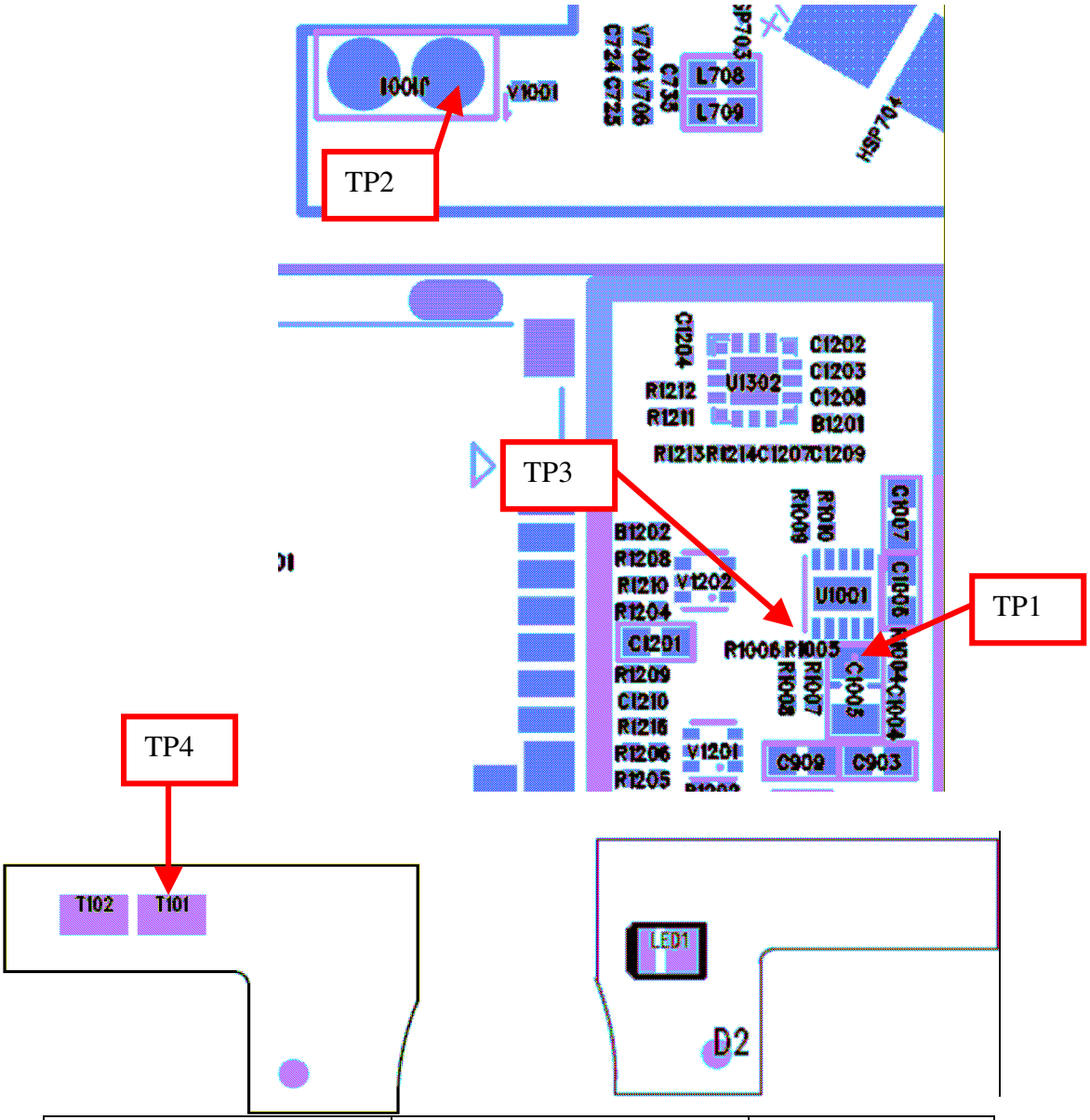

KEY PAD Connector
Check this component of J1401 soldering work properly
J1401
DF40C-20DS-0.4V(51)
VBAT
KP_LEDIN
KP_ROW5
KP_ROW4
KP_ROW3
KP_ROW2
KP_ROW1
KP_ROW0
KP_COL0
KP_COL1
KP_PWRKEY
KP_COL3
KP_COL2
SIDE UP
SIDE DOWN
SIM Switch
SW1 LS12K2H-T
SW2 LS12K2H-T
SW3 LS12K2H-T
MLVS0402M07-330
ESD_PAD_1
HSP1319
HSP1320
HSP1321
HSP1322
HSP1323
HSP1324
V1414
V1415
V1416
V1417
V1418
V1424
V1425
KROW2
KROW3
KROW4
KROW5
KROW0
KROW1
KCOL2
KCOL3
PWRKEY
KCOL1
KCOL0
V1404
V1405
V1406
ICVE21054E250R101FR
Check this component of SW1,SW2,SW3 soldering work properly
Check this component of V1404,V1405,V1406 soldering work properly
R1401
0.00Ohm
KEY_LED
C1402
1.00nF
V1414
MLVS0402M07-330

4.13.3 Checking Flow



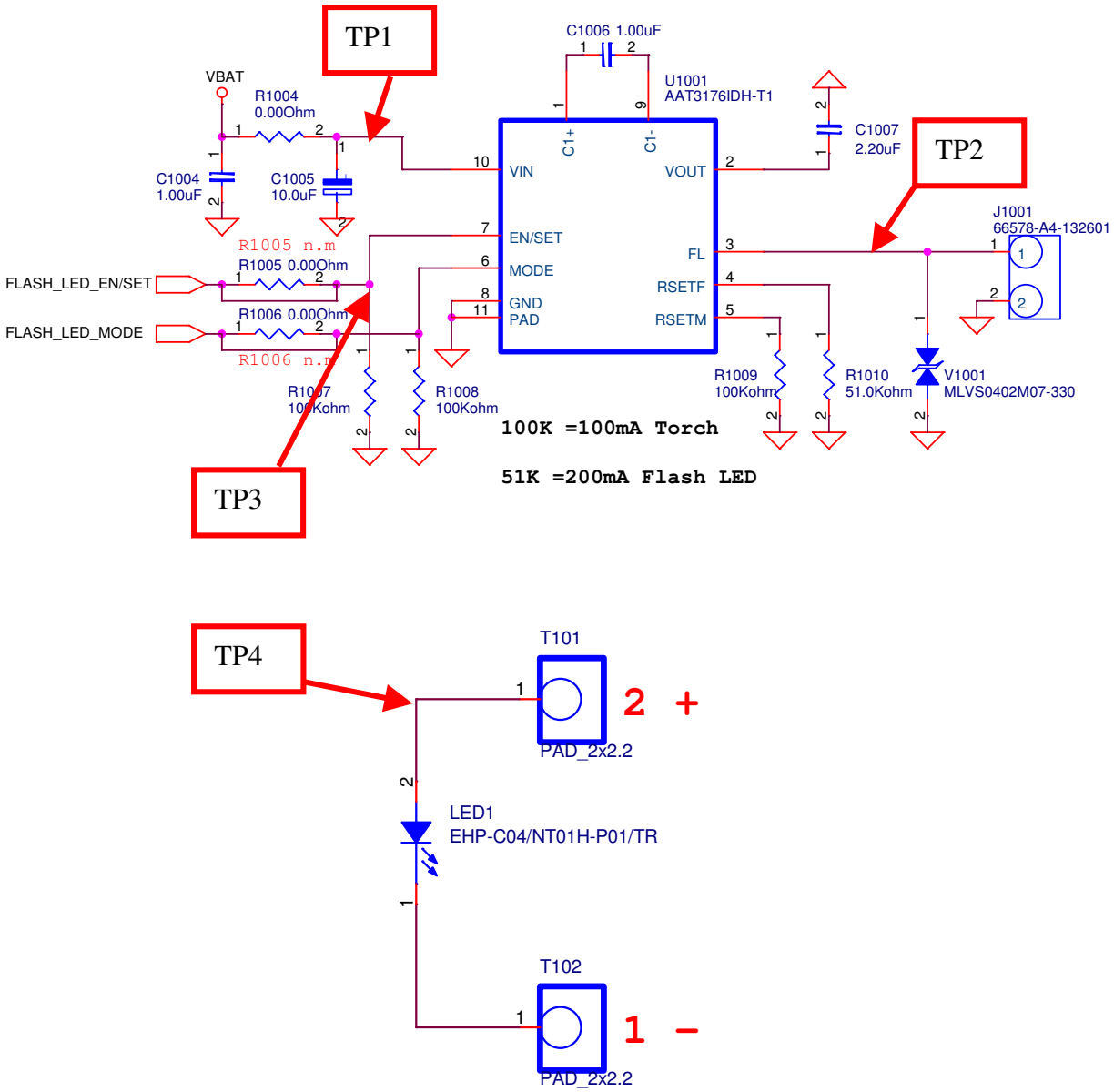
4.14 Flash LED Trouble

4.14.1 Test Point

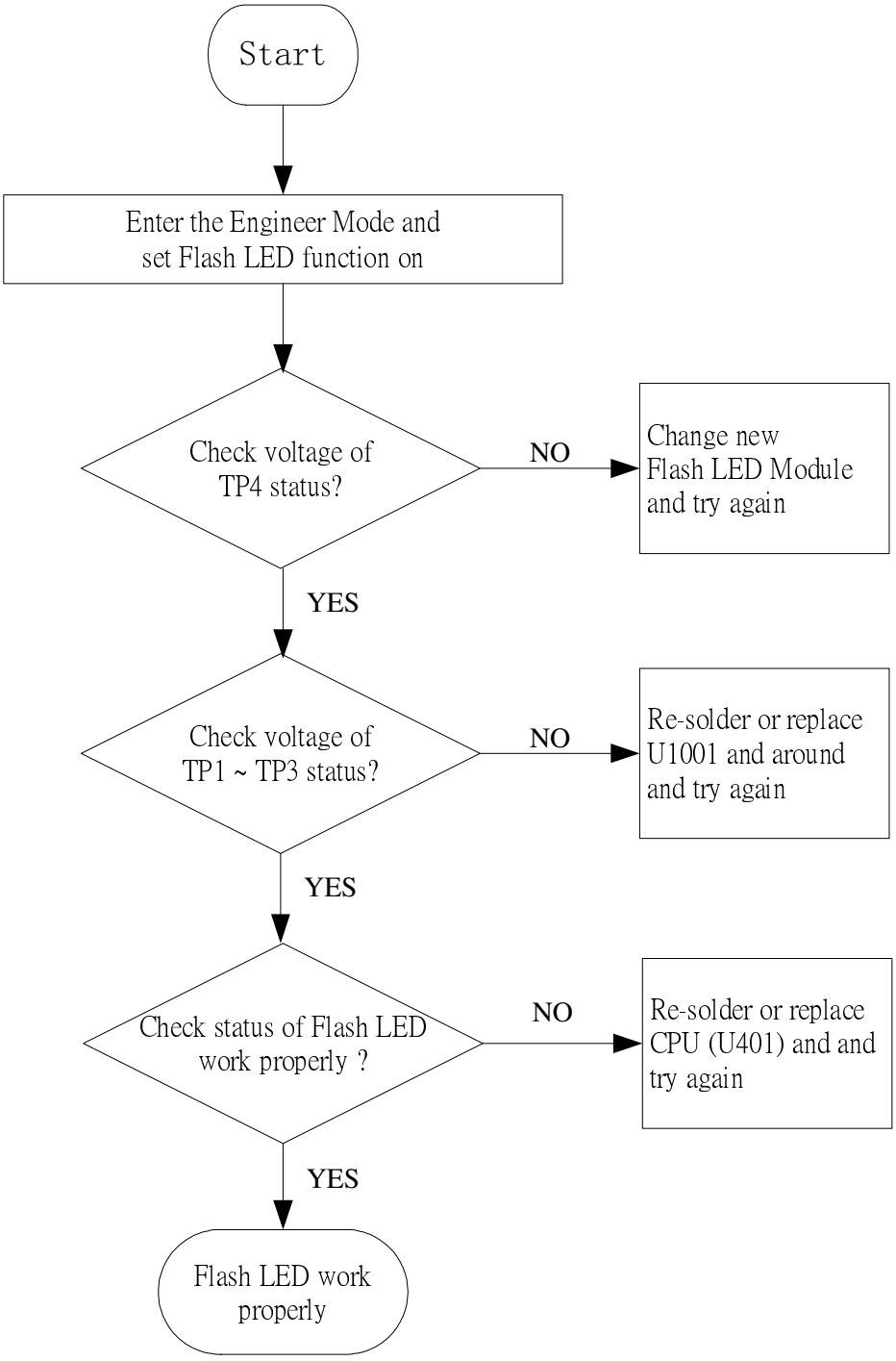


	Voltage	PART
C1005.1	3.6V~4.2V	TP1(C1005.1)
J1001.1	6.5V~ 5.0V without LED 2.4V~ 3.3V with LED	TP2(J1001.1)
FLASH_LED_EN/SET	2.8V	TP3(R1005.2)
T101	2.4V~ 3.3V	TP4(T101)

4.14.2 Circuit Diagram

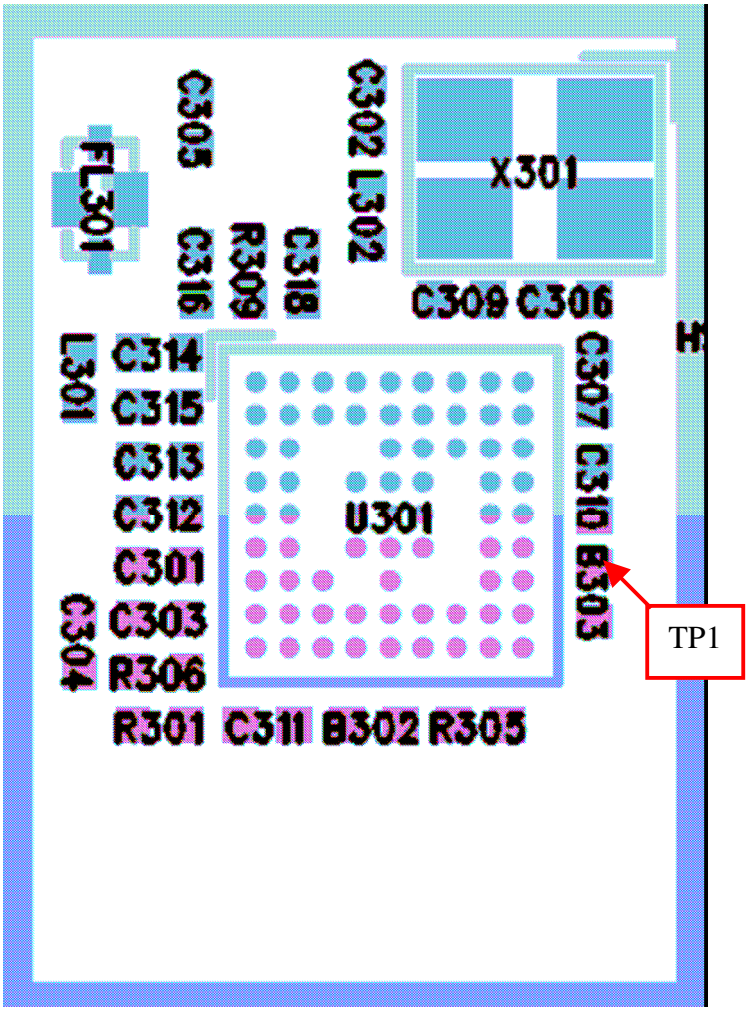


4.14.3 Checking Flow



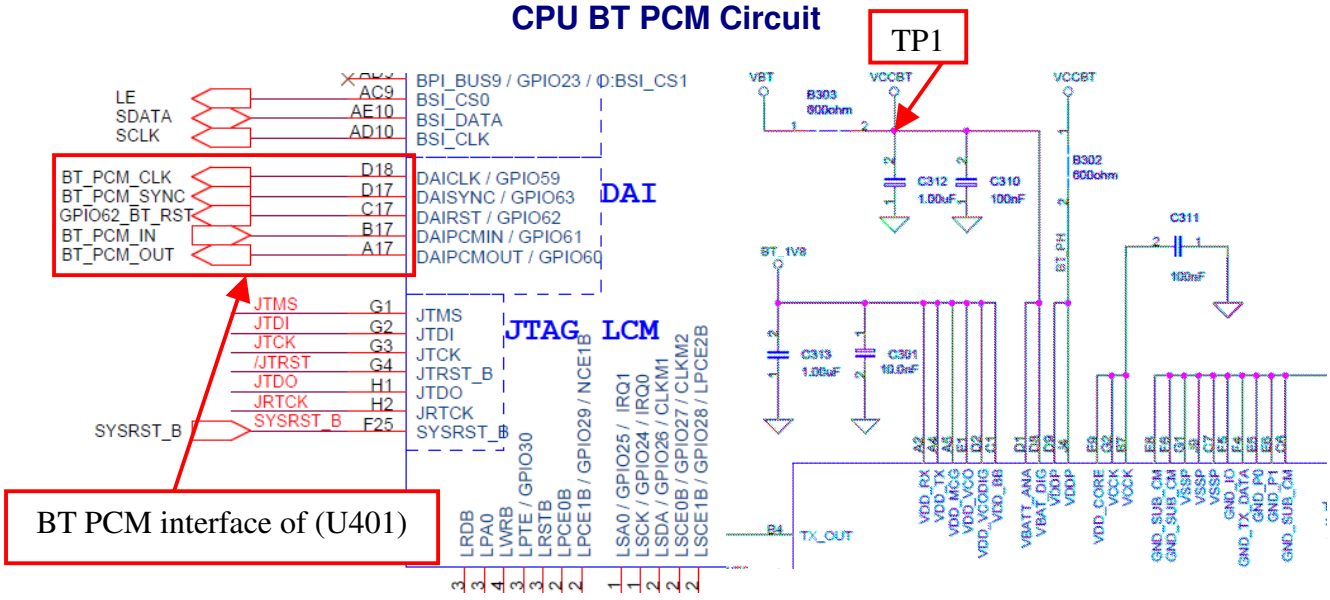
4.15 Bluetooth Voice Trouble

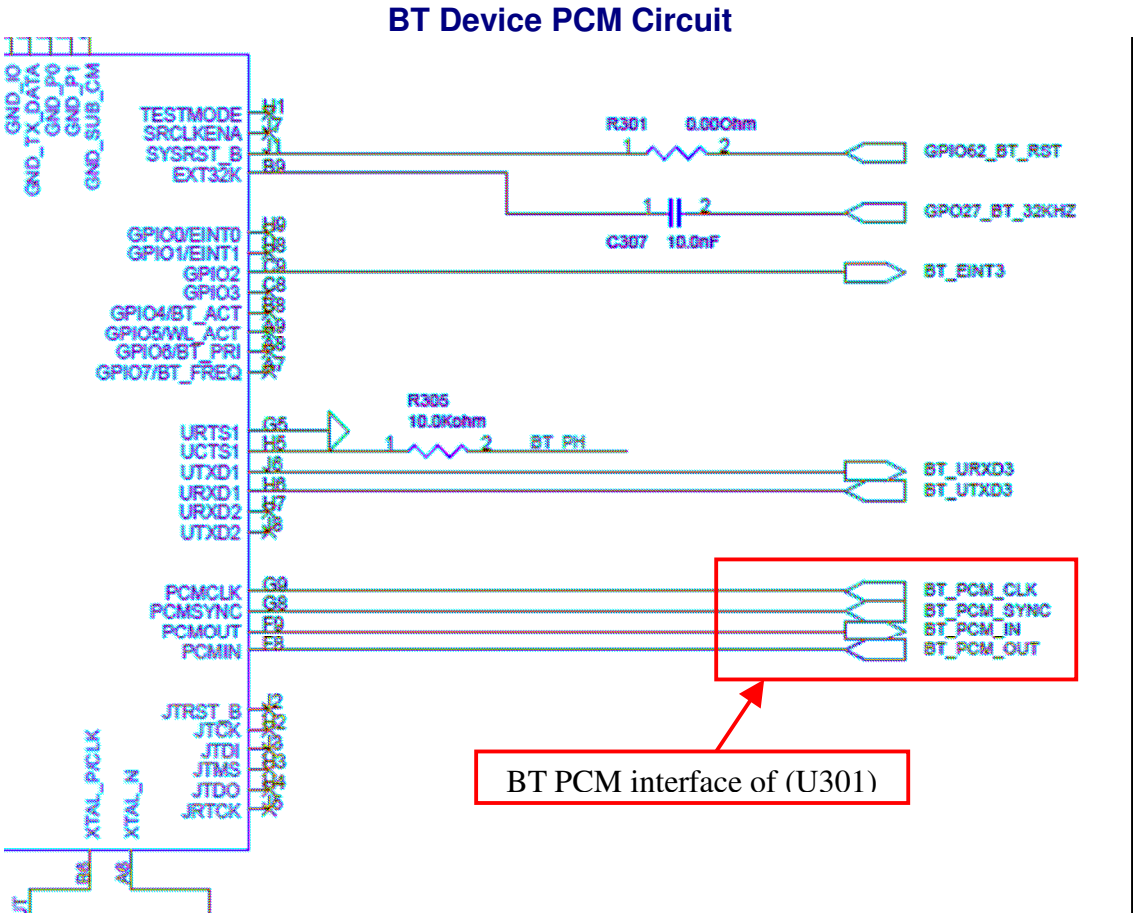
4.15.1 Test Point



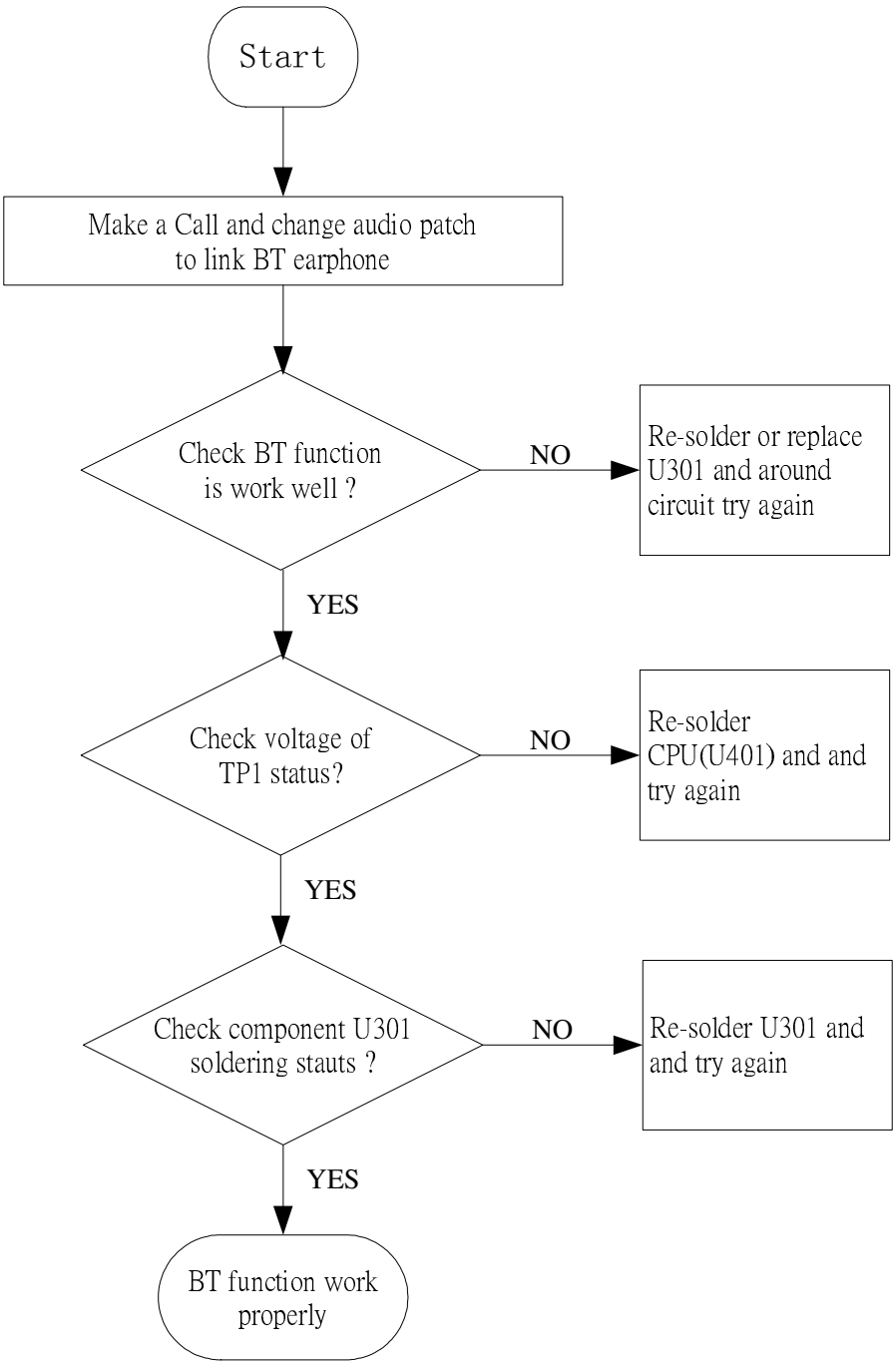
	Voltage	PART
VCCBT	2.8V	TP1(B303.2)

4.15.2 Circuit Diagram



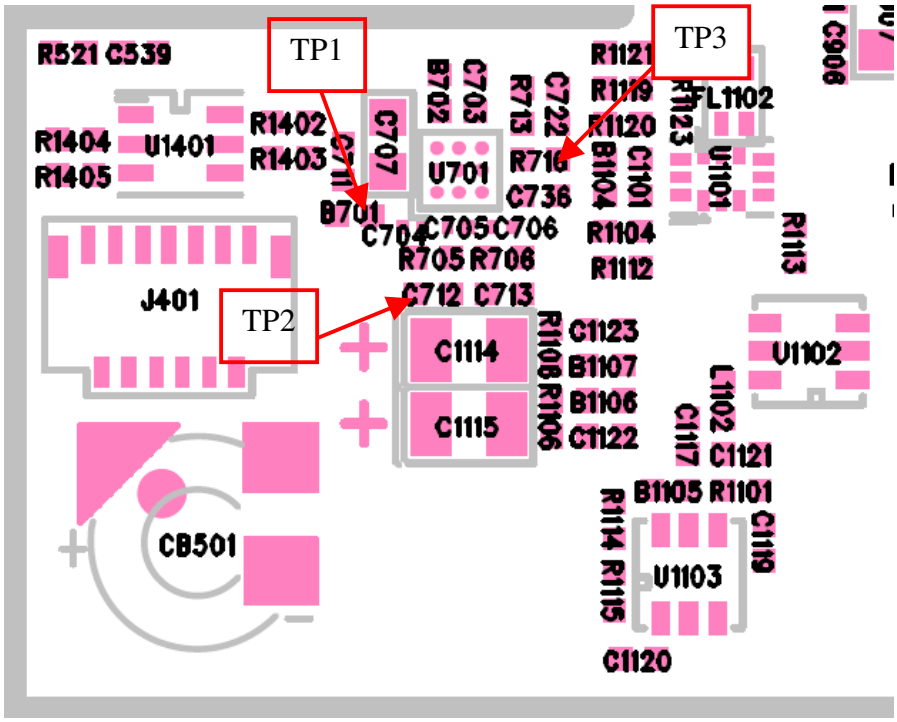


4.15.3 Checking Flow

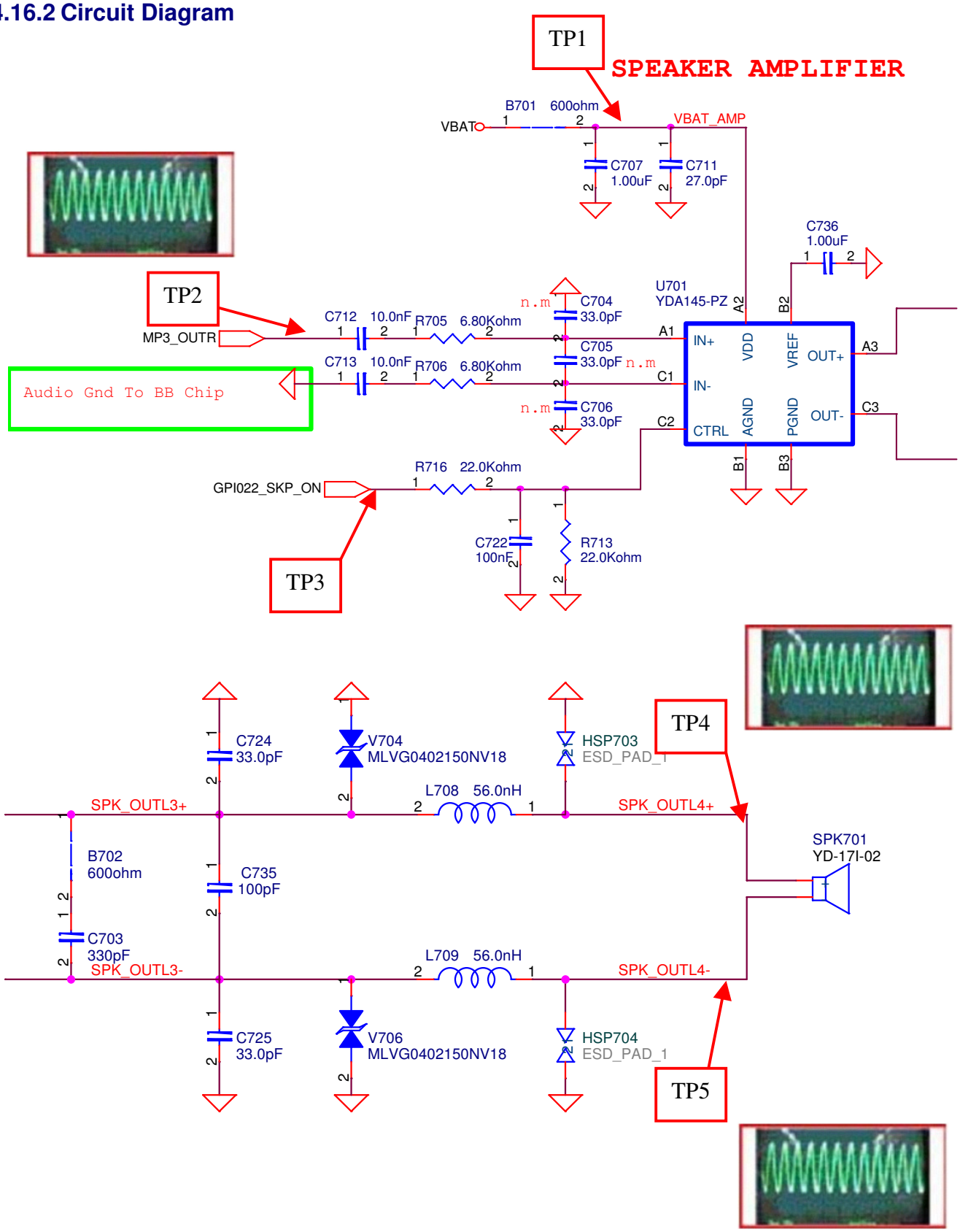


4.16 Speaker Trouble

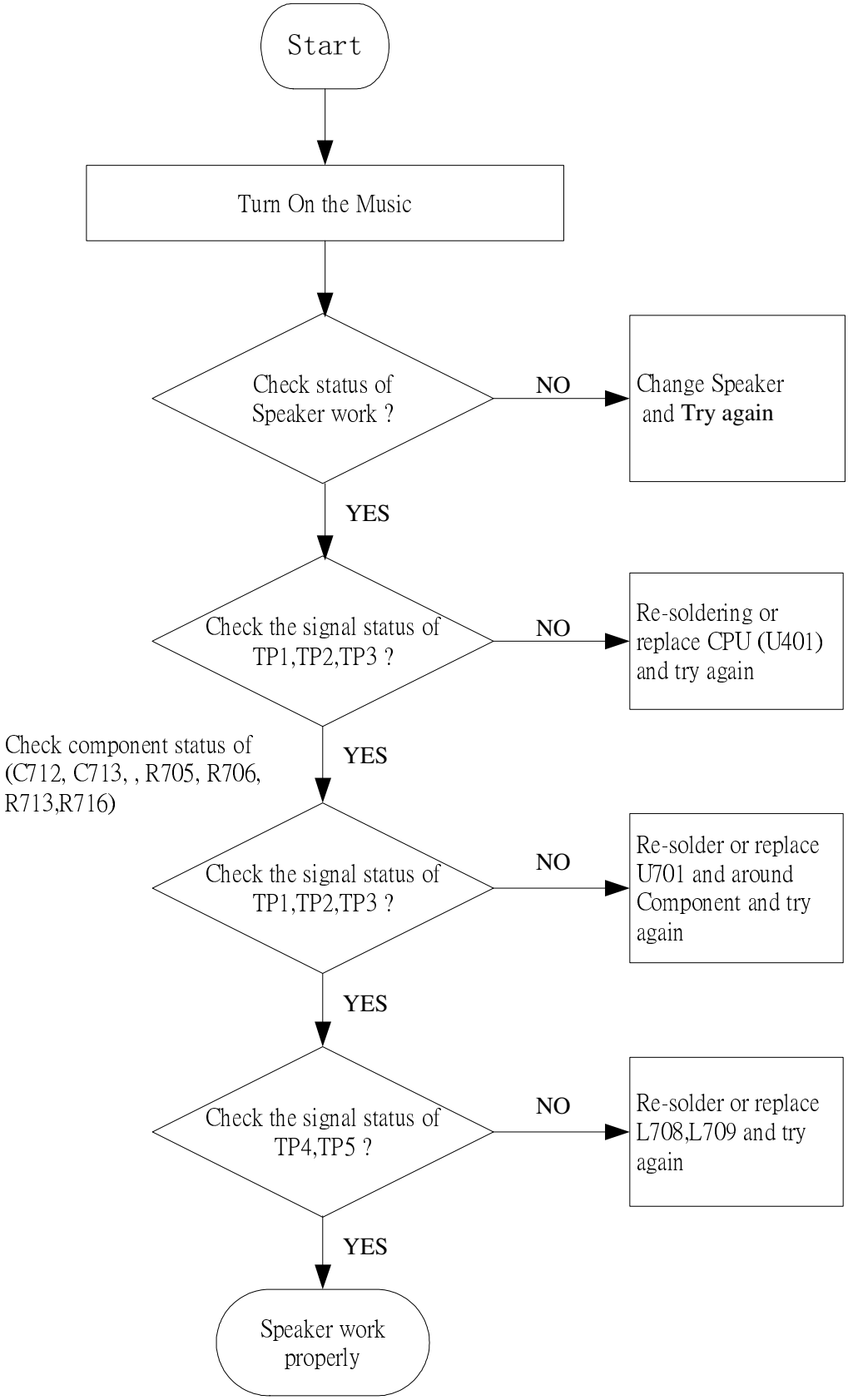
4.16.1 Test Point



4.16.2 Circuit Diagram

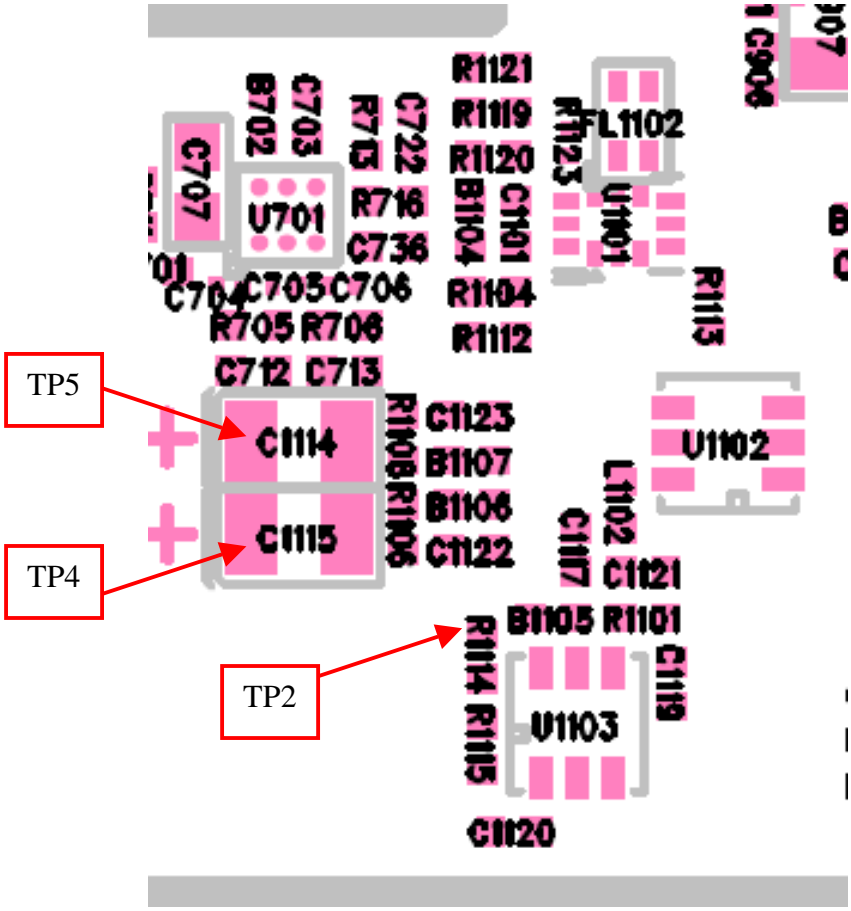


4.16.3 Checking Flow



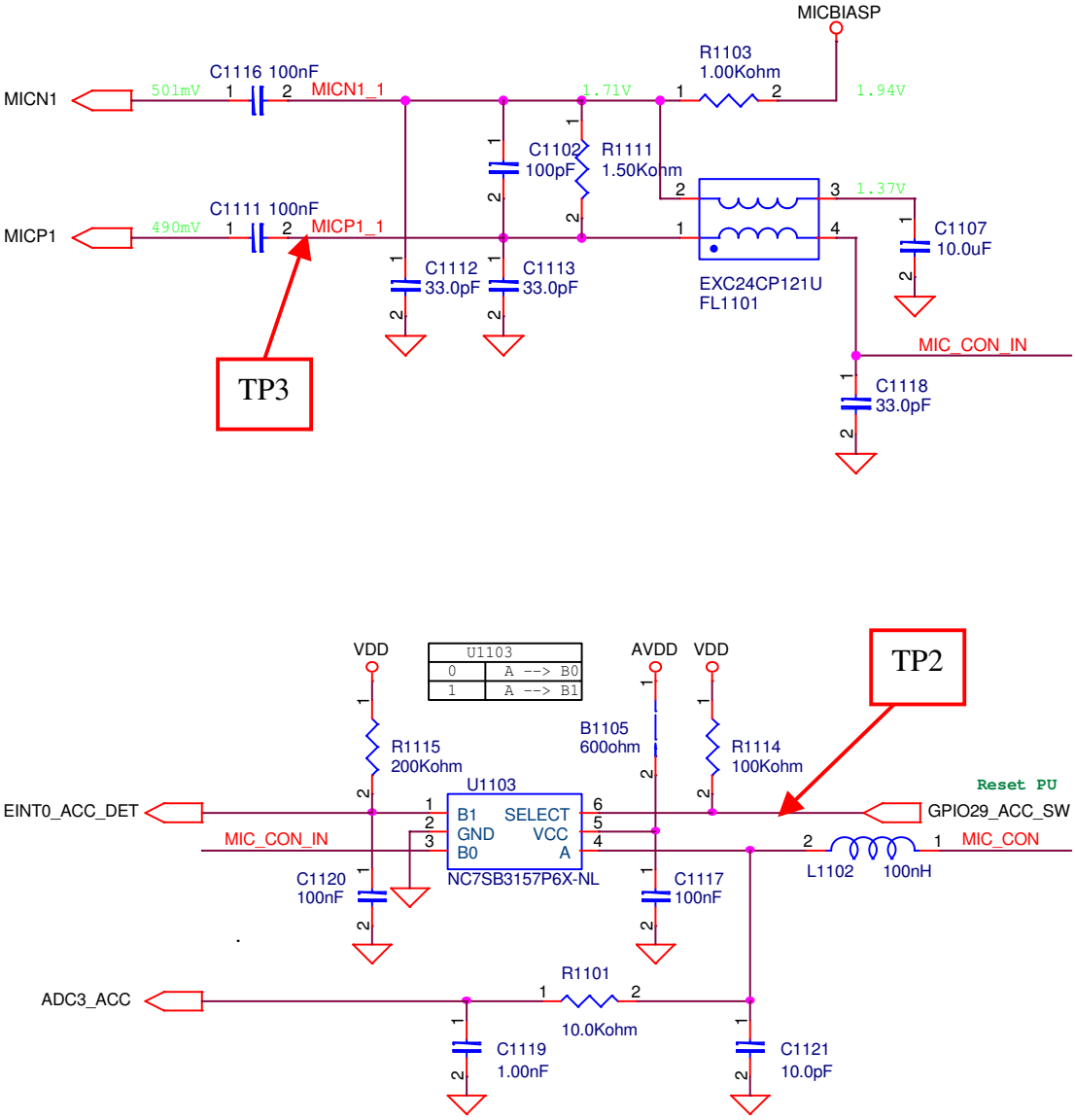
4.17 Headphone Trouble

4.17.1 Test Point



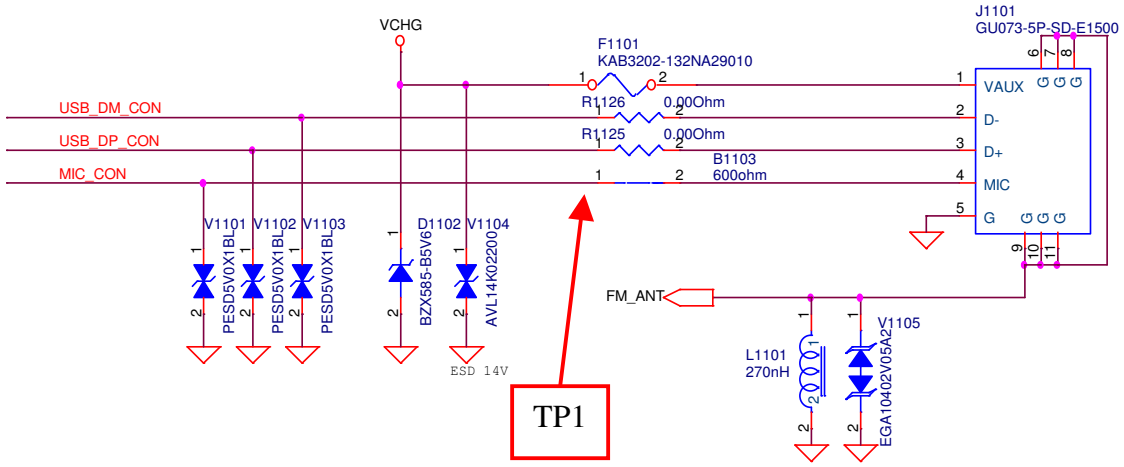
	Voltage	PART
B1103.1	0.8V~1.2V	TP1(B1103.1)
GPIO29_ACC_SW	> 0.2V	TP2(R1114.2)
MICP1_1	0.8V~1.2V	TP3(C1111.2)
C1115.1	1.4V	TP4(C1115.1)
C1114.1	1.4V	TP5(C1114.1)

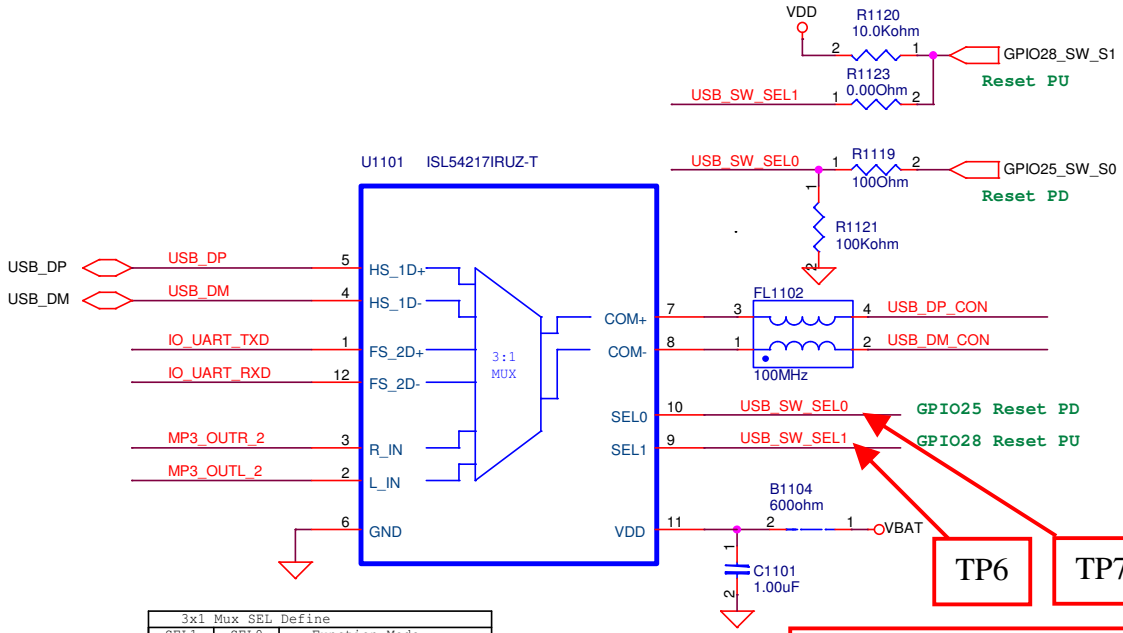
4.17.2 Circuit Diagram



I/O INTERFACE

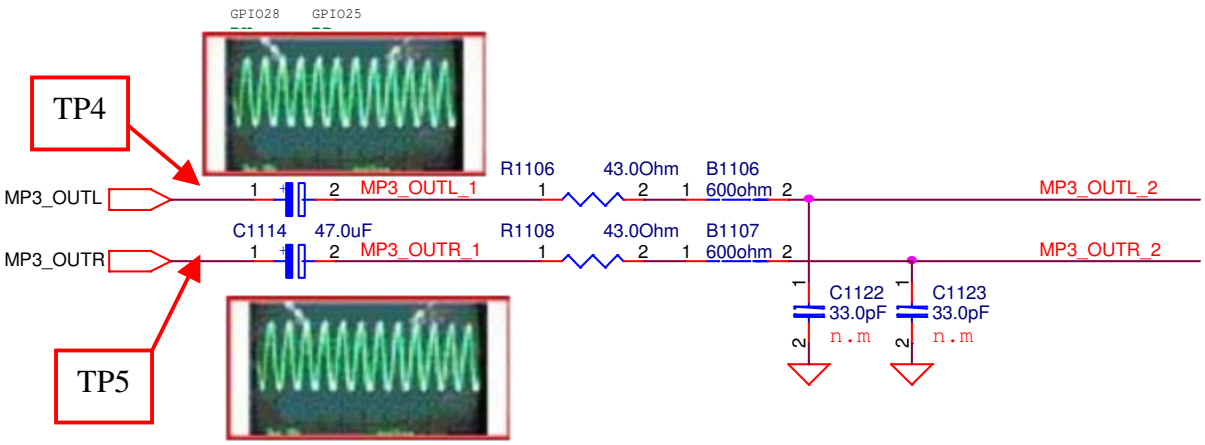
Micro USB



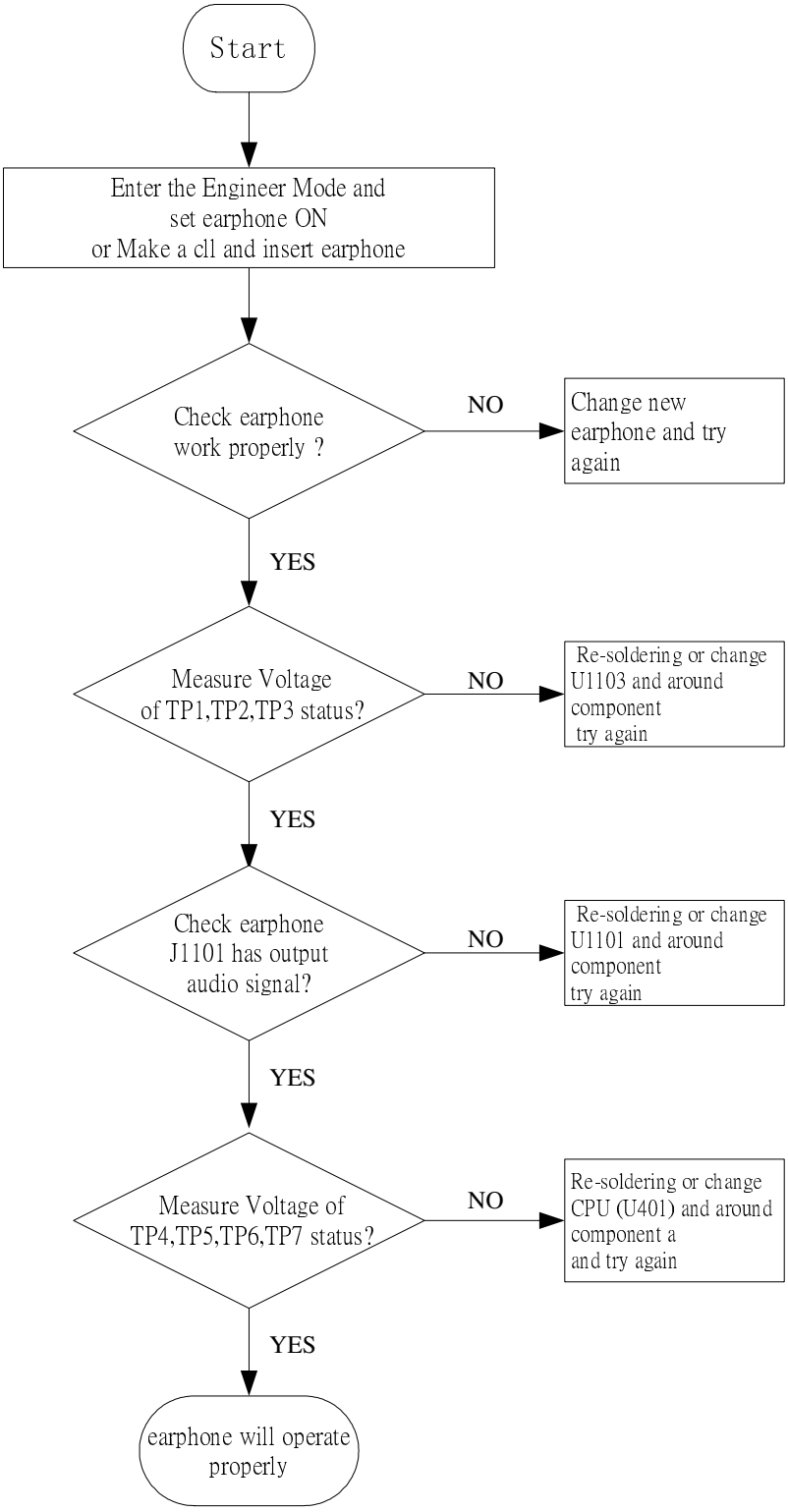


3x1 Mux SEL Define		
SEL1	SEL0	Function Mode
0	0	OPEN
0	1	USB
1	0	UART **
1	1	AUDIO

TP6 = 2.8V, TP7 = 0V



4.17.3 Checking Flow

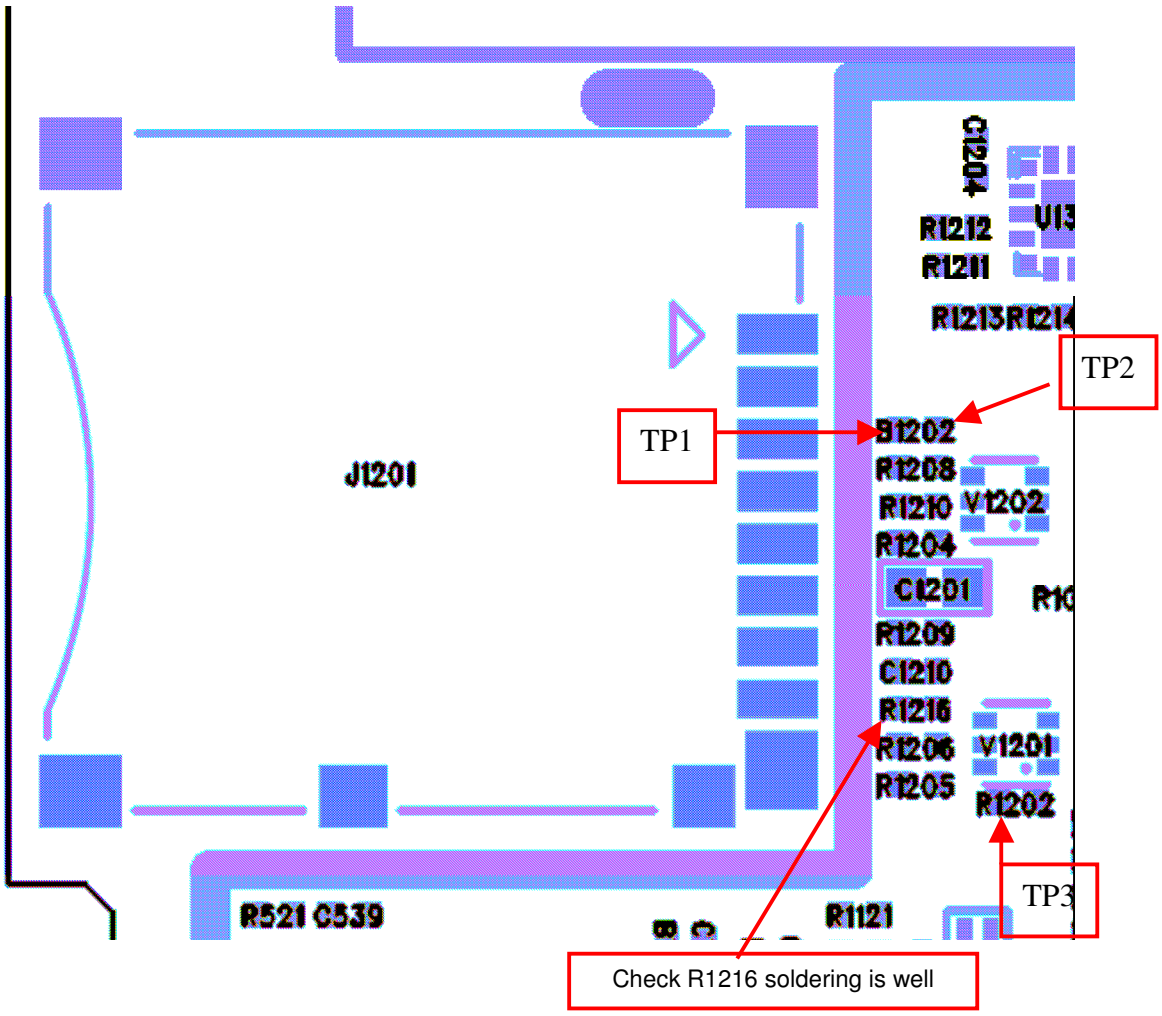


4.18 T-Flash Trouble

4.18.1 Test Point

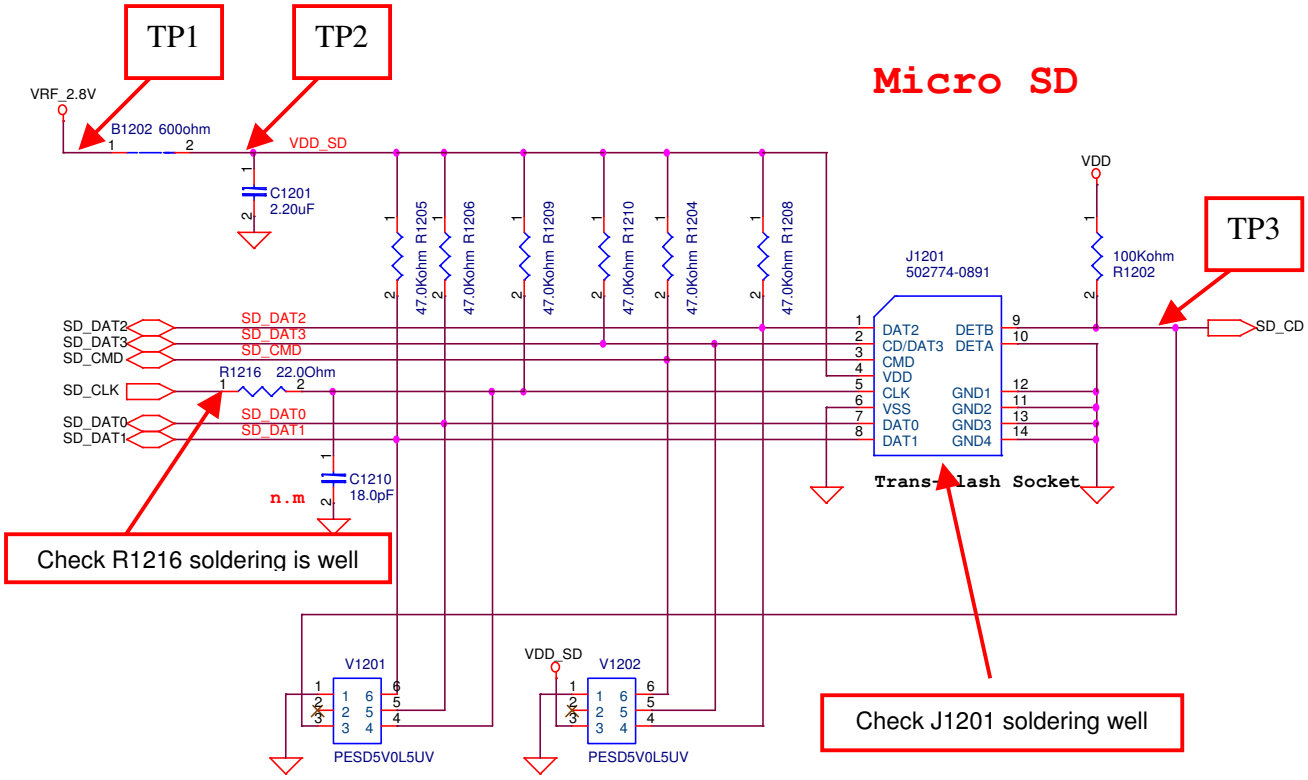
Check Points:

- **Voltage of TP1, TP2, TP3**

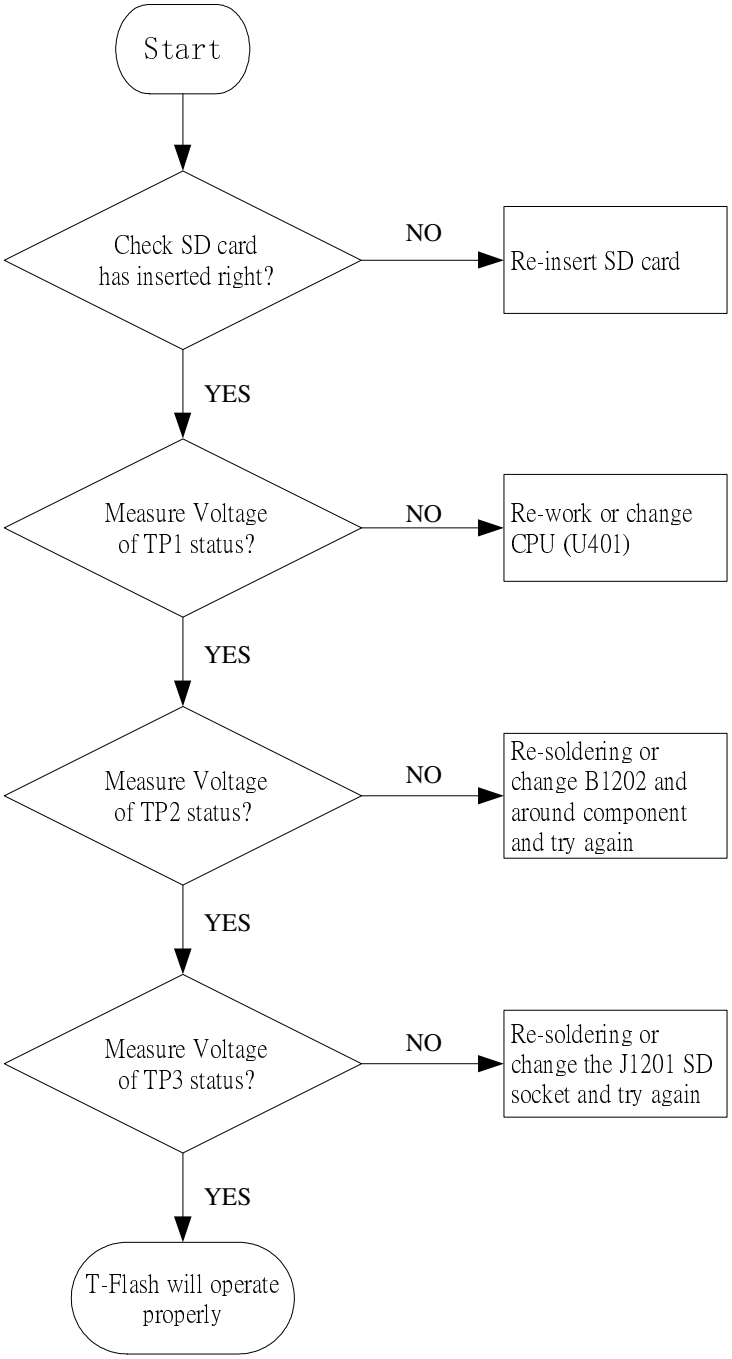


	Voltage	PART
VRF_2.8V	2.8V	TP1(B1202.1)
VDD_SD	2.8V	TP2(B1202.2)
R1202.2	> 0.2V (insert Card)	TP3(R1202.2)

4.18.2 Circuit Diagram

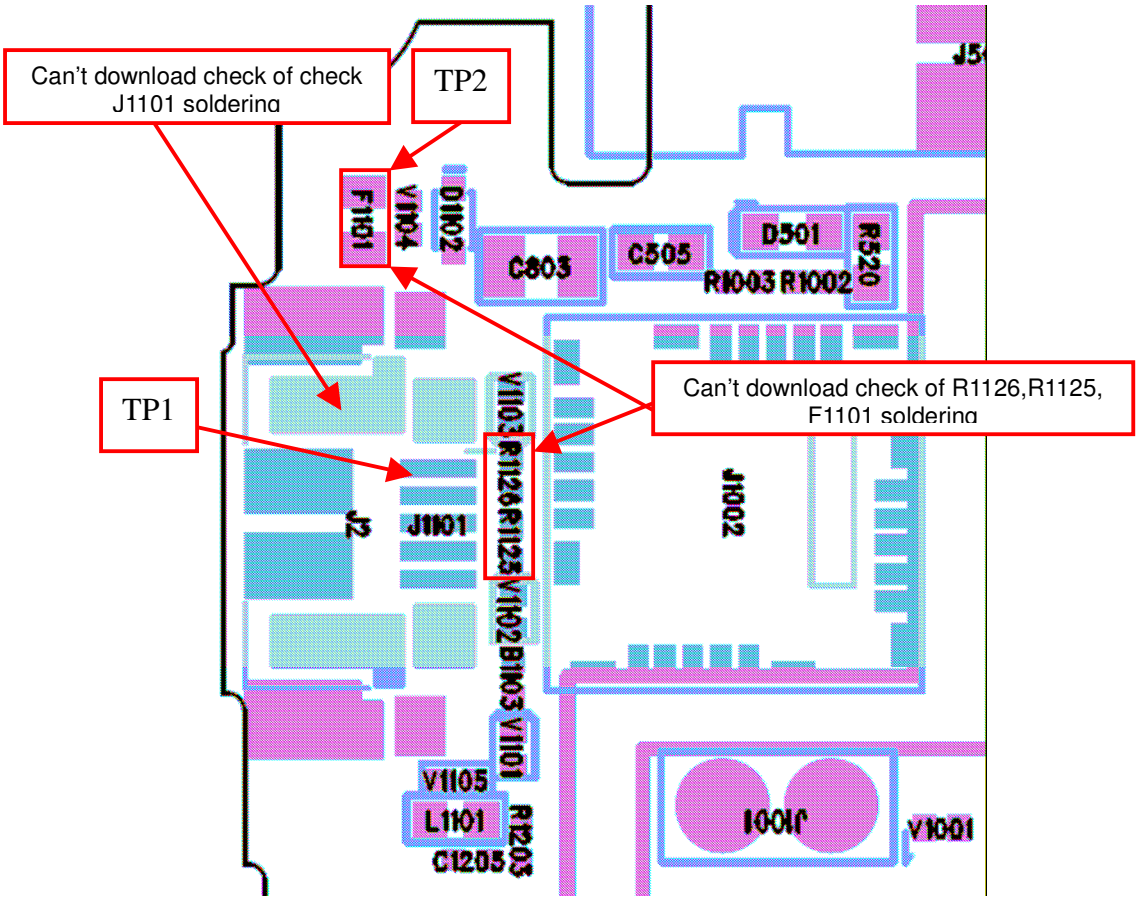


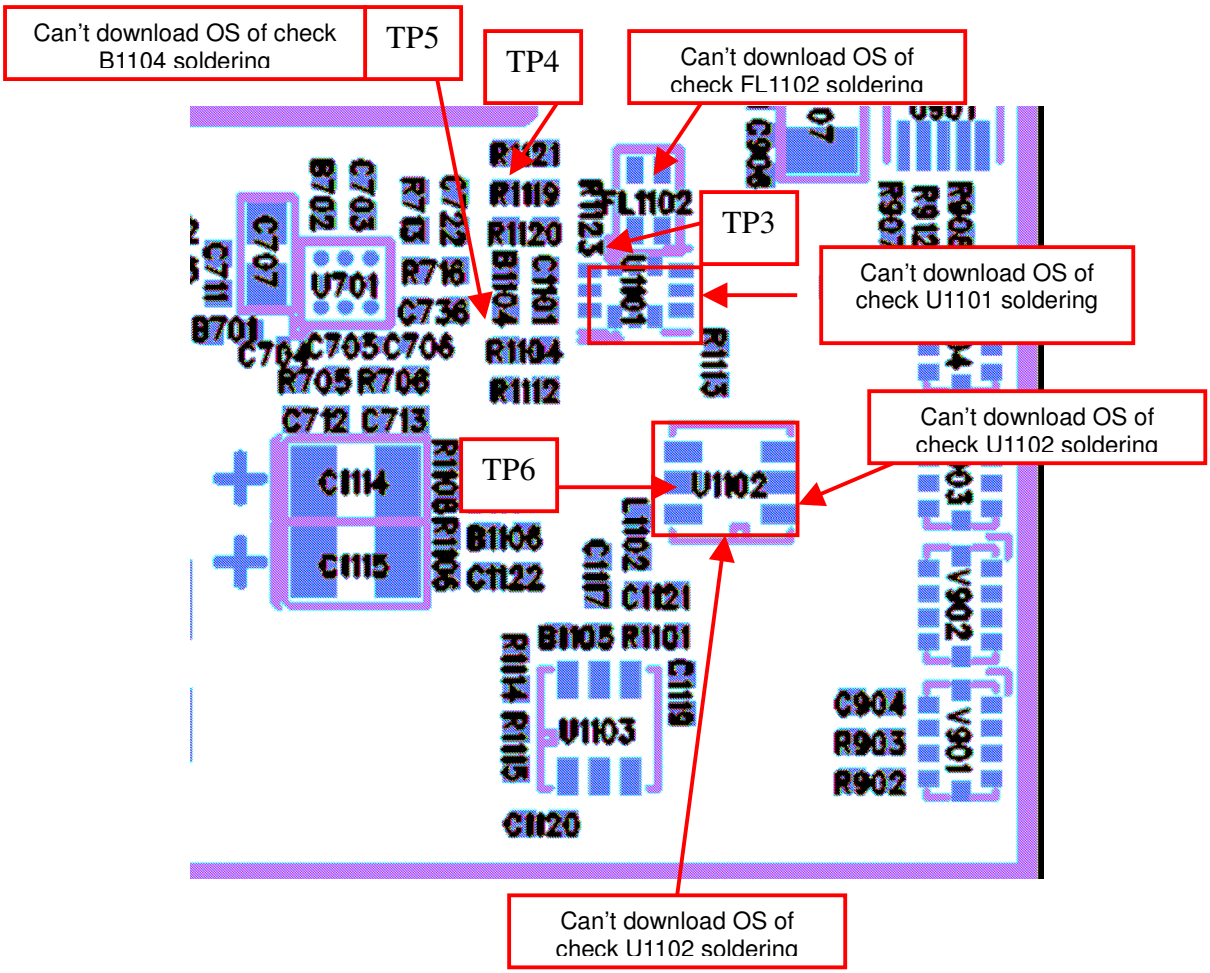
4.18.3 Checking Flow



4.19 USB Download Trouble

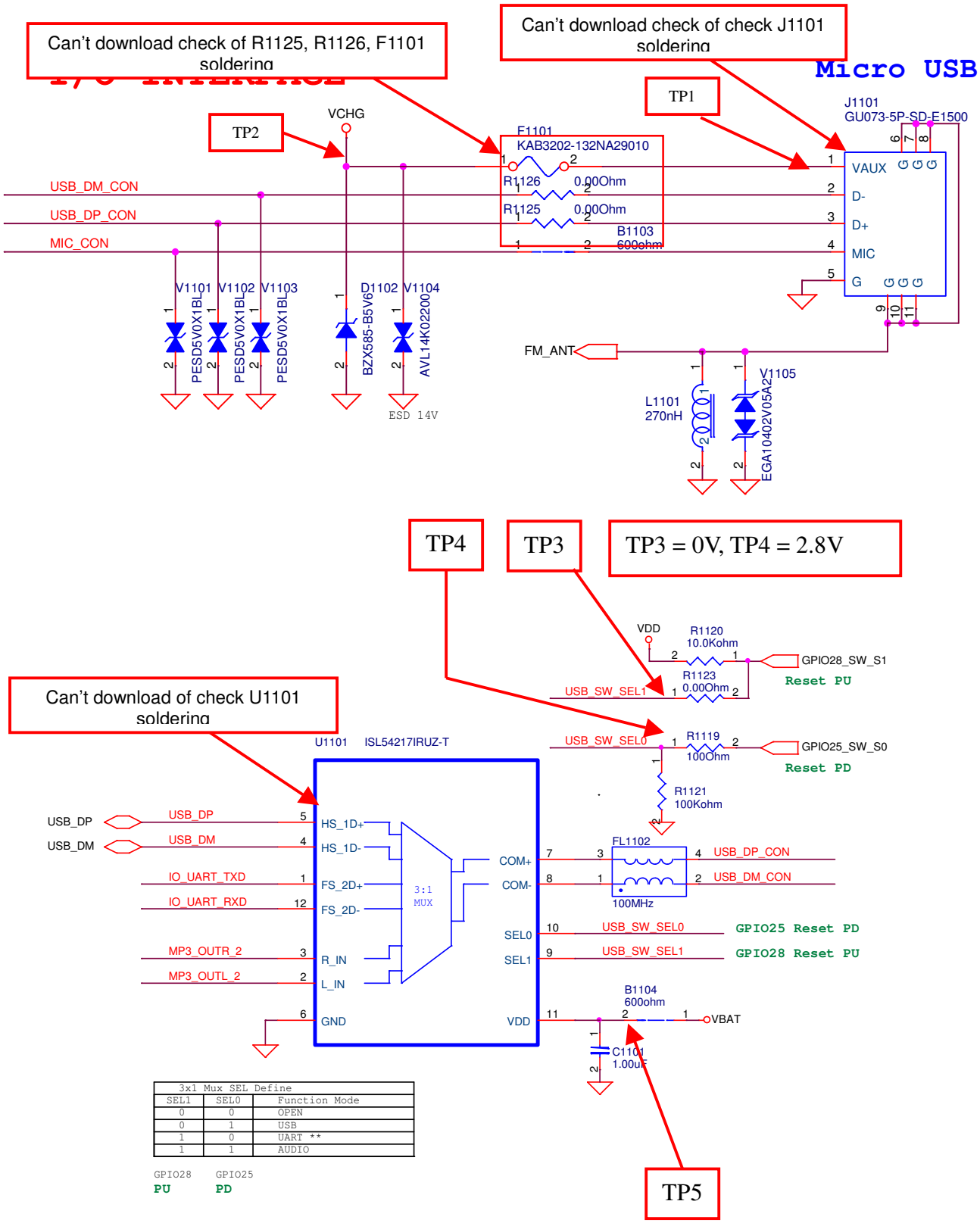
4.19.1 Test Point

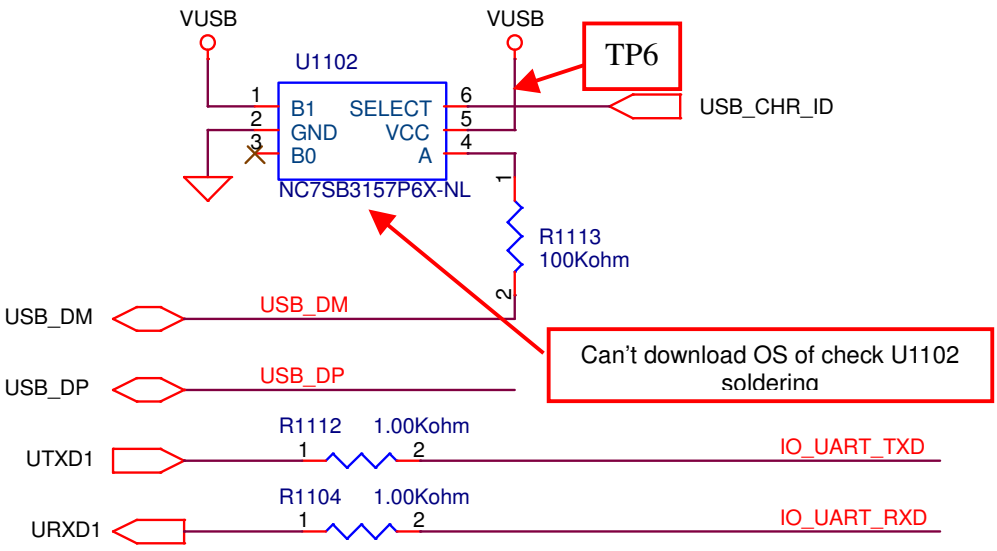




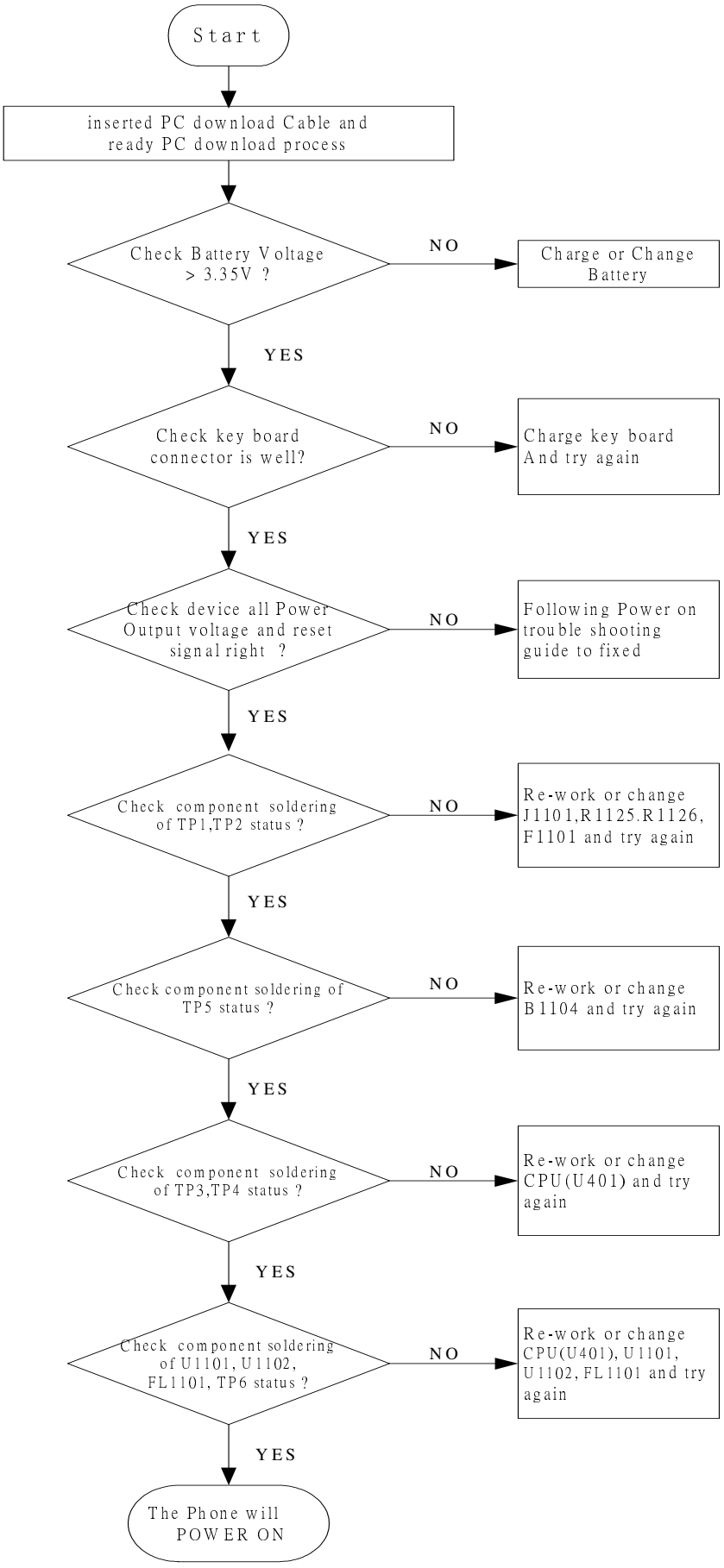
	Voltage	PART
J1101.1	4.6V~ 5.8V	TP1(J1101.1)
VCHG	4.6V~ 5.8V	TP2(F1101.1)
R1123.1	0V	TP3(R1123.1)
R1119.1	2.8V	TP4(R1119.1)
B1104.2	3.6V~4.2V	TP5(B1104.2)
U1102.5	3.3V	TP6(U1102.5)

4.19.2 Circuit Diagram




VUSB
VUSB
TP6
U1102
1
2
3
B1
GND
B0
SELECT
VCC
A
6
5
4
USB_CHR_ID
NC7SB3157P6X-NL
1
2
R1113
100Kohm
USB_DM
USB_DM
USB_DP
USB_DP
Can't download OS of check U1102 soldering
R1112
1.00Kohm
UTXD1
IO_UART_TXD
R1104
1.00Kohm
URXD1
IO_UART_RXD

4.19.3 Checking Flow

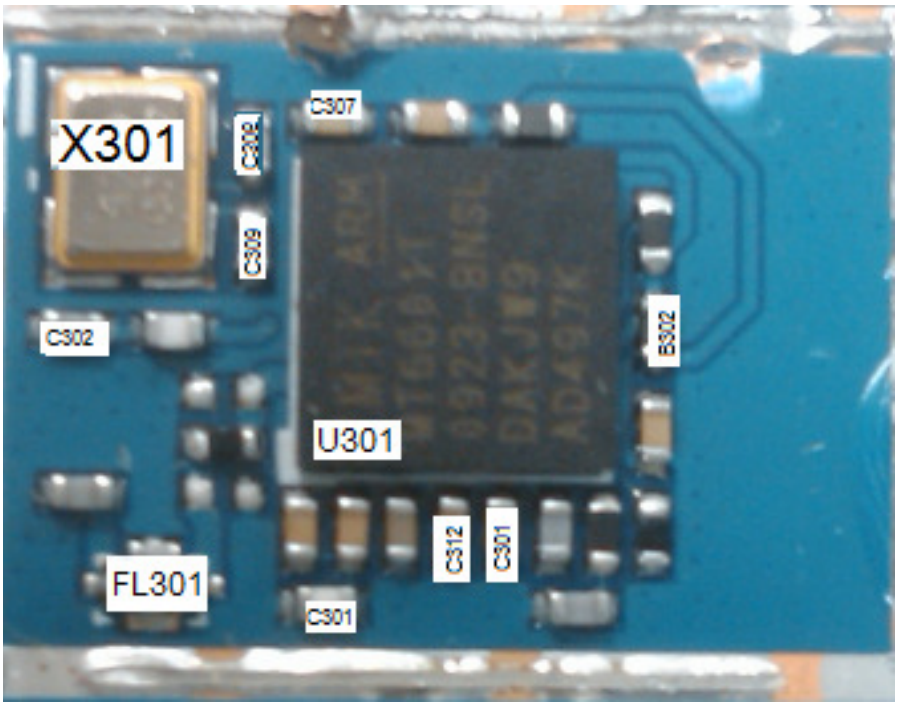


RF Trouble Shooting

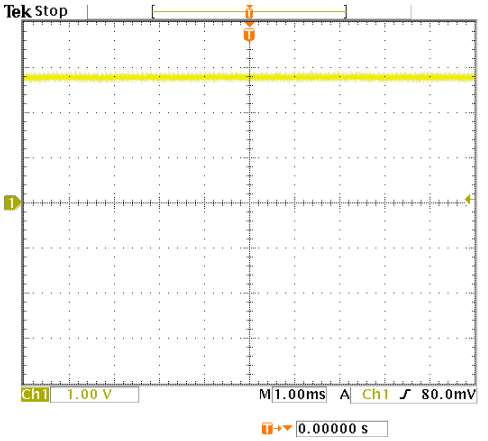
Bluetooth (MT6601)

4.20 Bluetooth Trouble

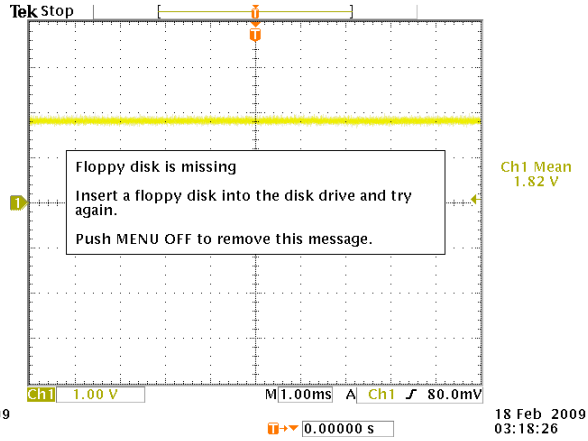
4.20.1 Test Point



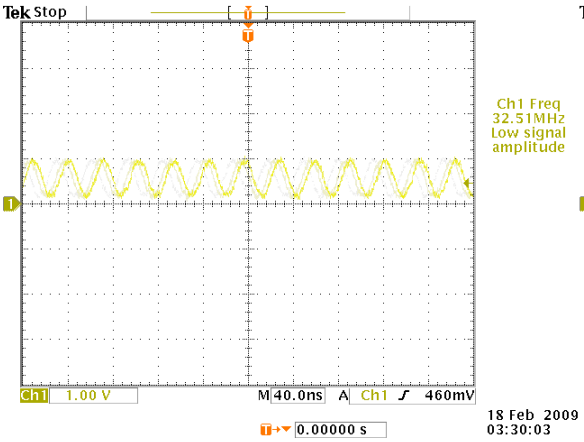
C312 & B302: 2.8±0.2V



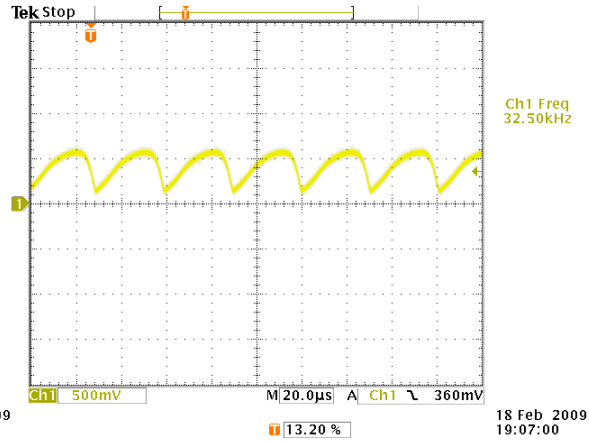
C301 & C302: 1.8±0.2V



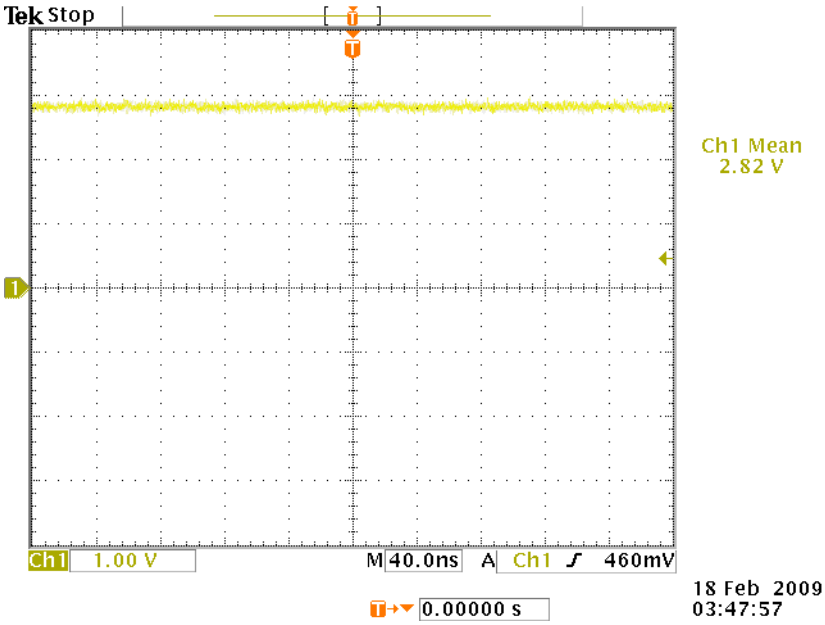
C306 or C309: 32MHz



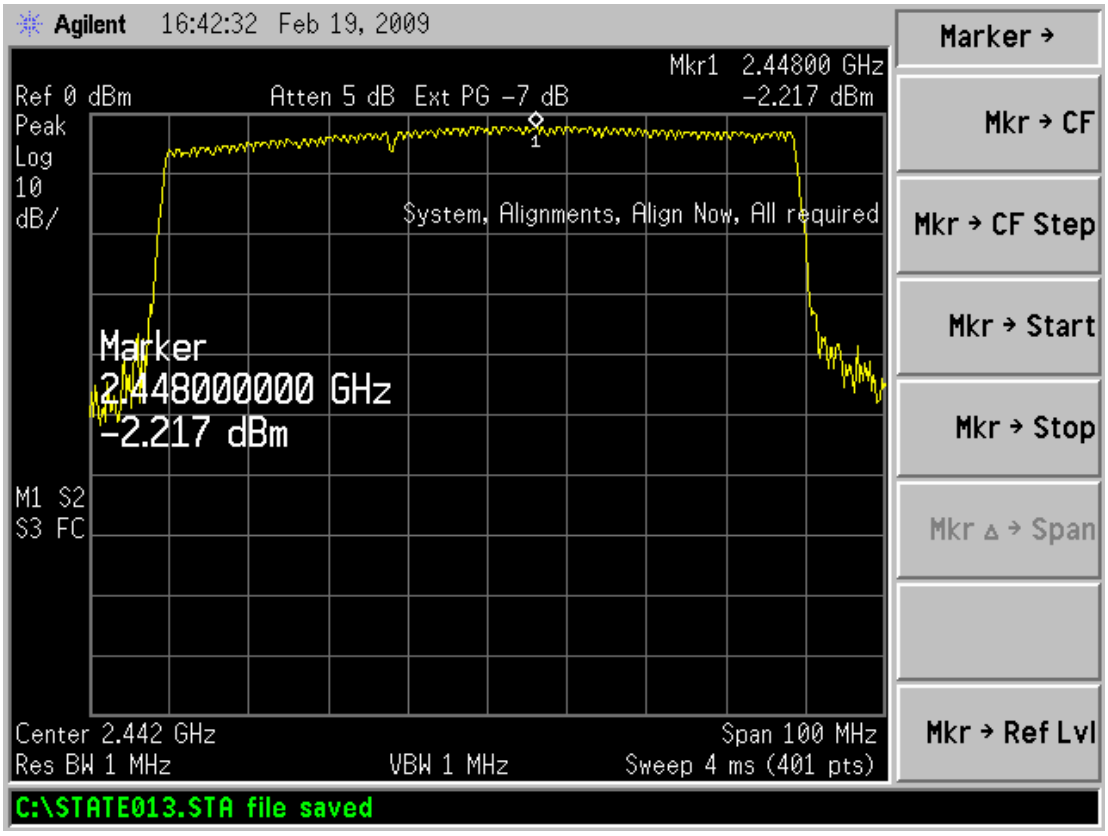
C307: 32kHz



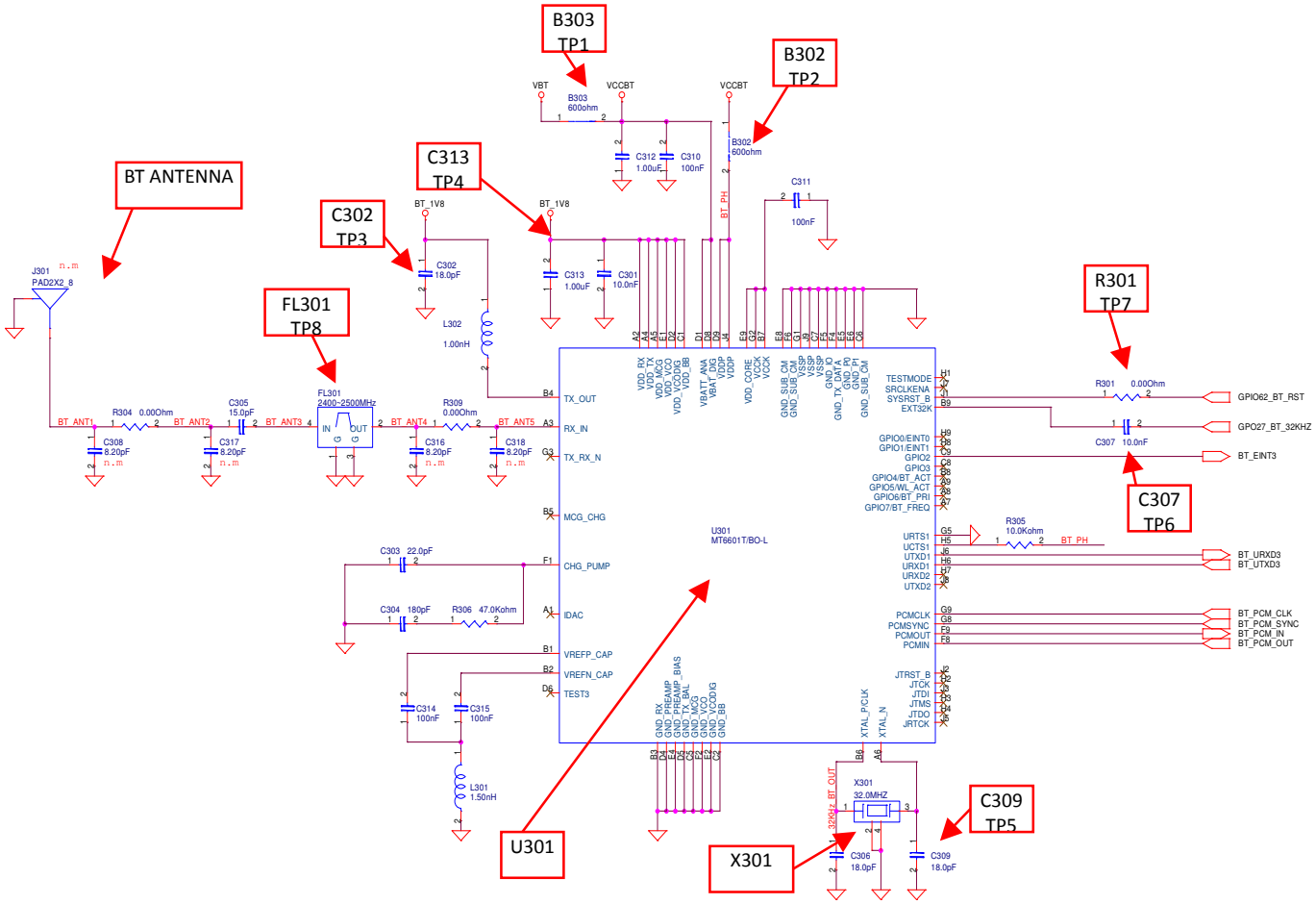
R301: 2.8±0.2V(high enable reset)



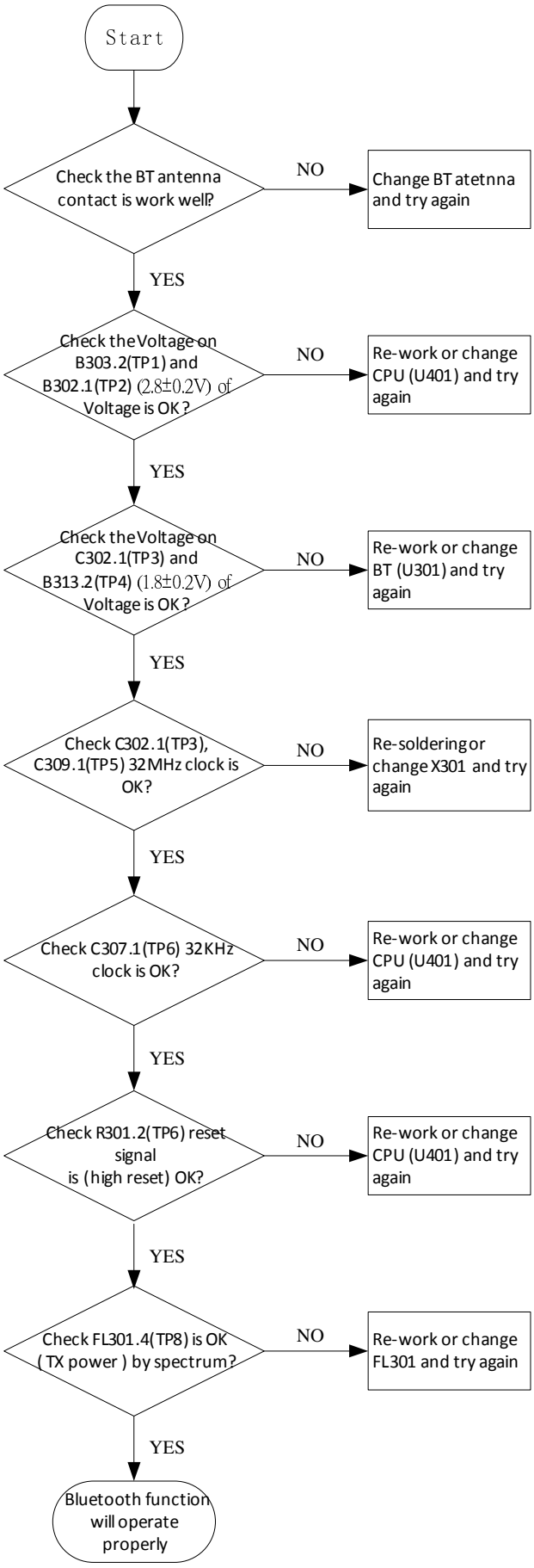
FL301: 1±5dBm(need to offset cableloss)
2402~2480 MHz(frequency hopping)



4.20.2 Circuit Diagram



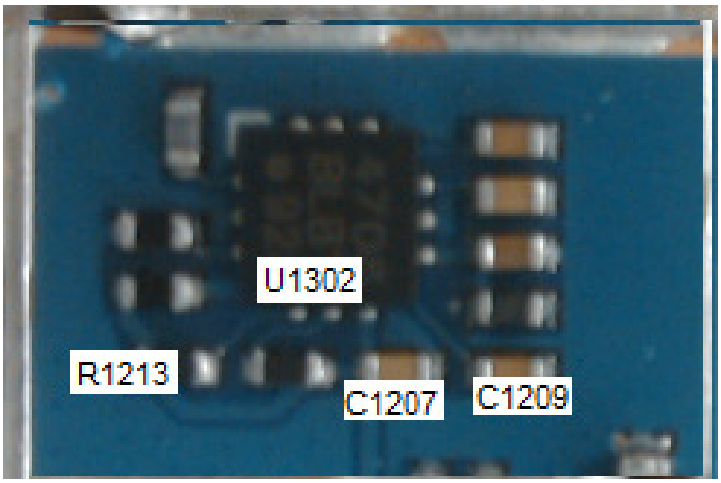
4.20.3 Checking Flow



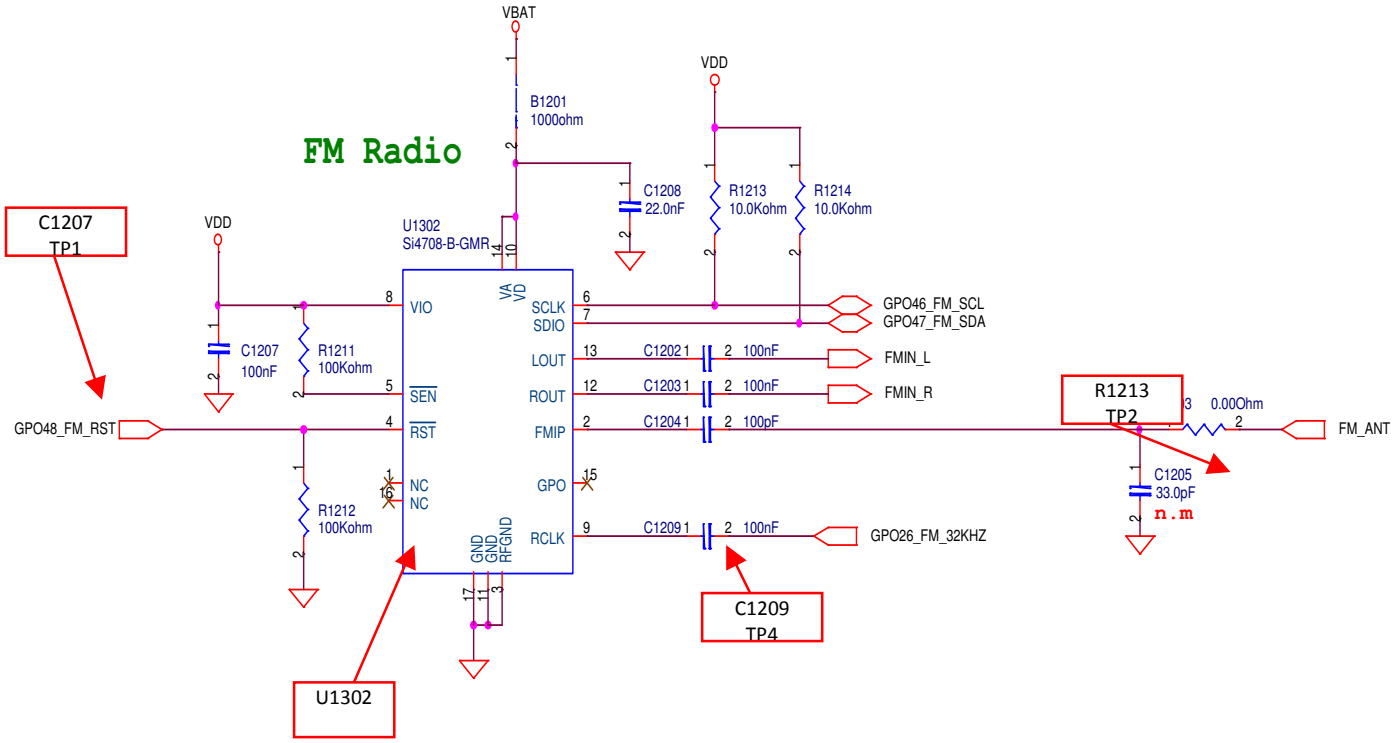
FM receiver (SI4708)

4.21 FM RECEIVER (SI4708) Trouble

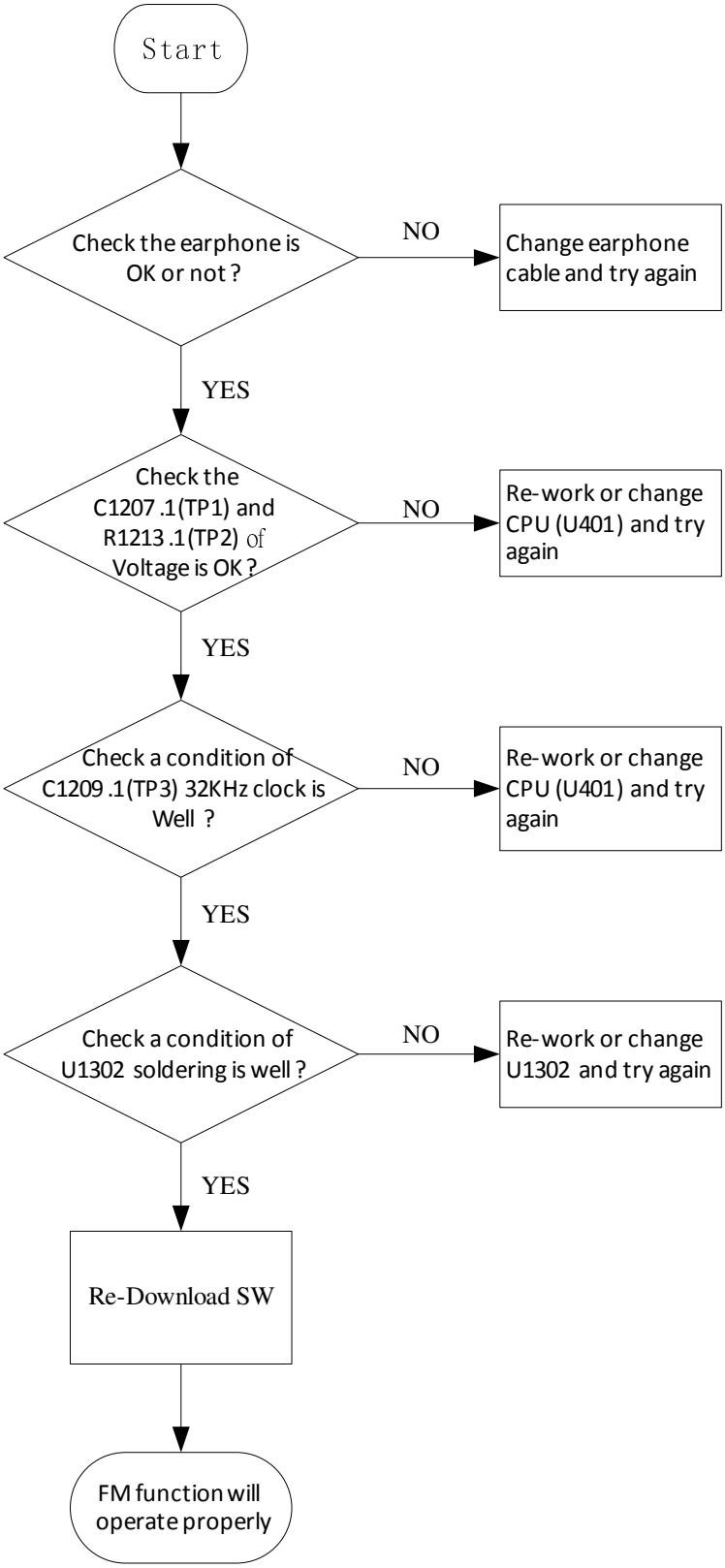
4.21.1 Test Point



4.21.2 Circuit Diagram



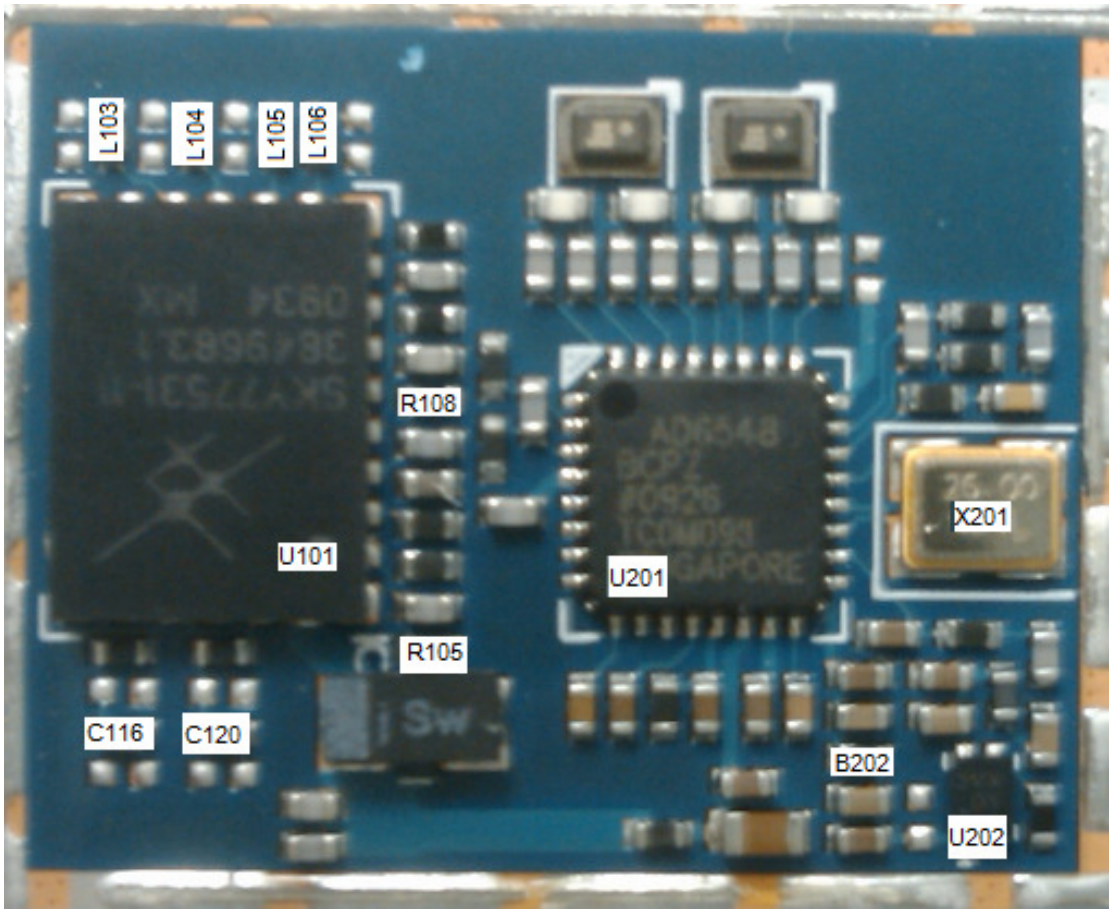
4.21.3 Checking Flow



RF Transceiver + PA (AD6548+SKY77531)

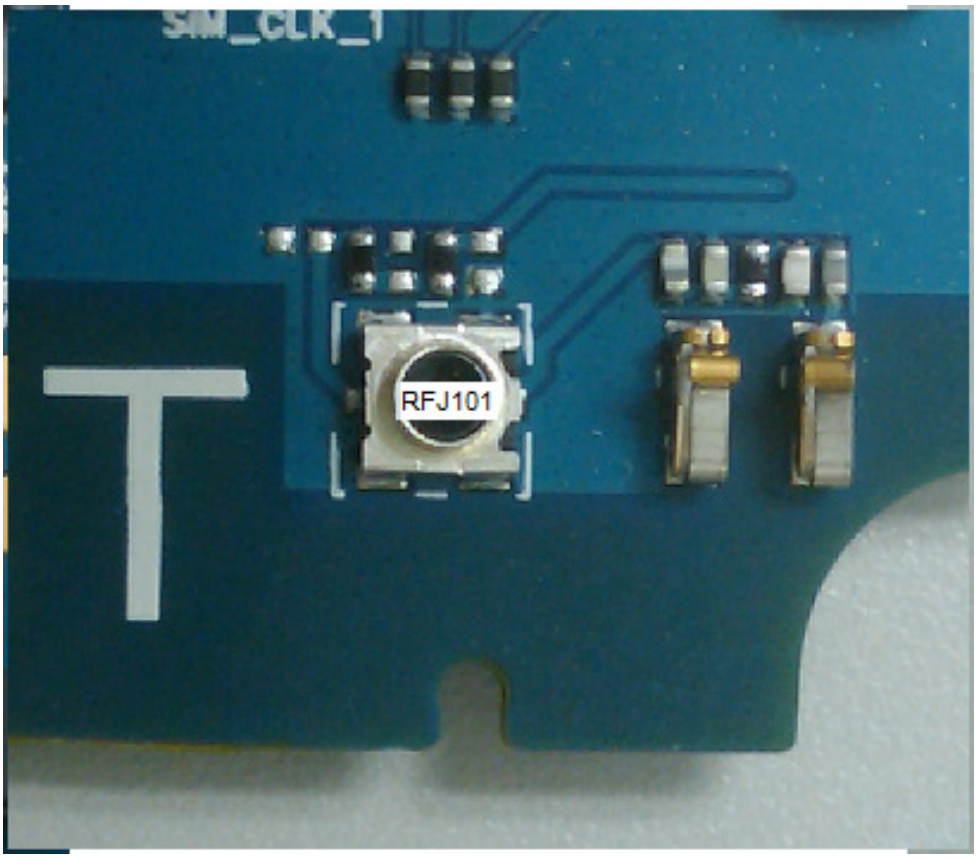
4.22 RF TRANSCEIVER +AP (AD6548+SKY77531) Trouble

4.22.1 Test Point



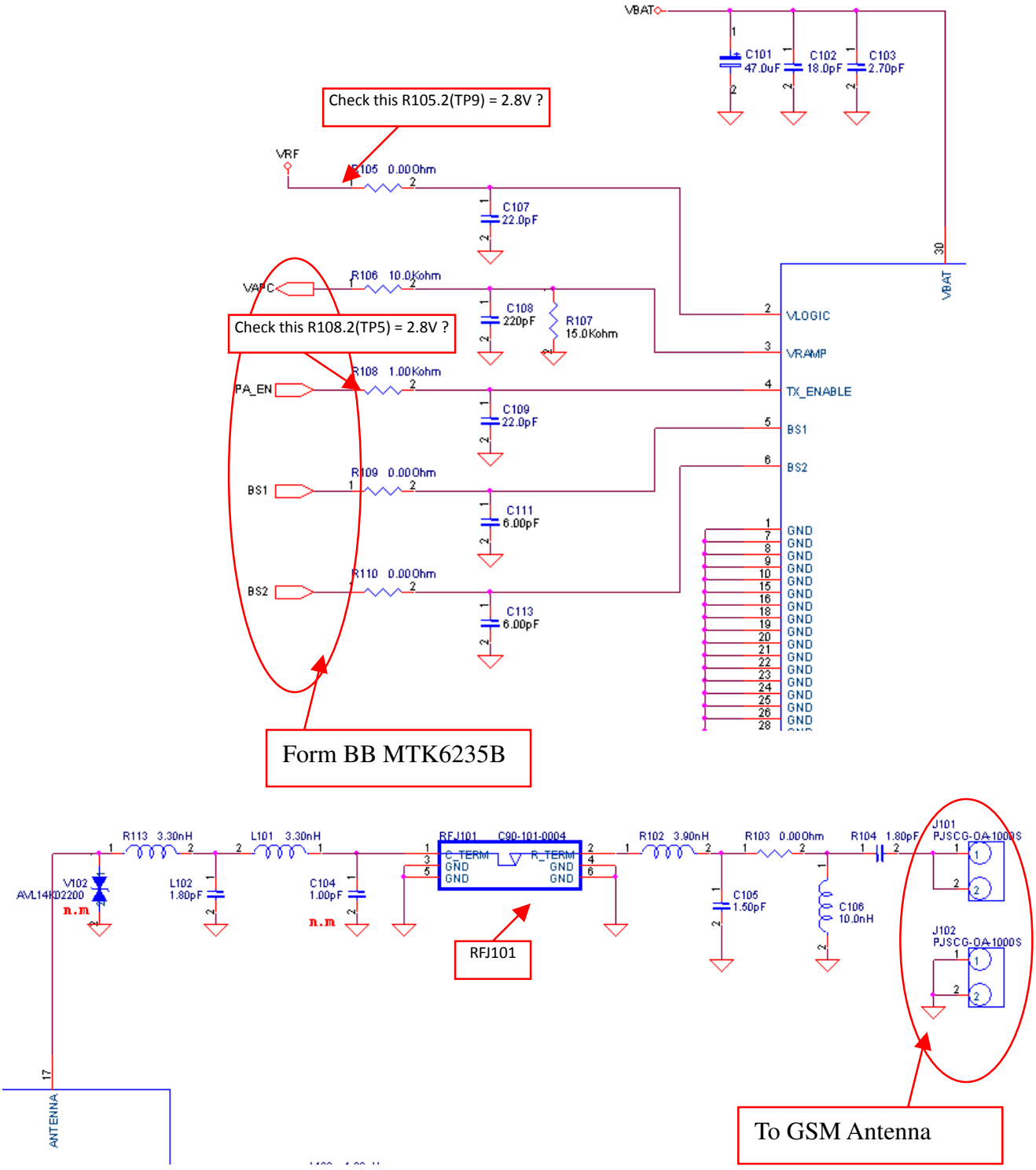
RFJ101: (need to offset the cableloss)
GSM900&GSM850: 32.5±3dBm (center channel = 40)
DCS1800&PCS1900: 29.5±3dBm (center channel = 700)

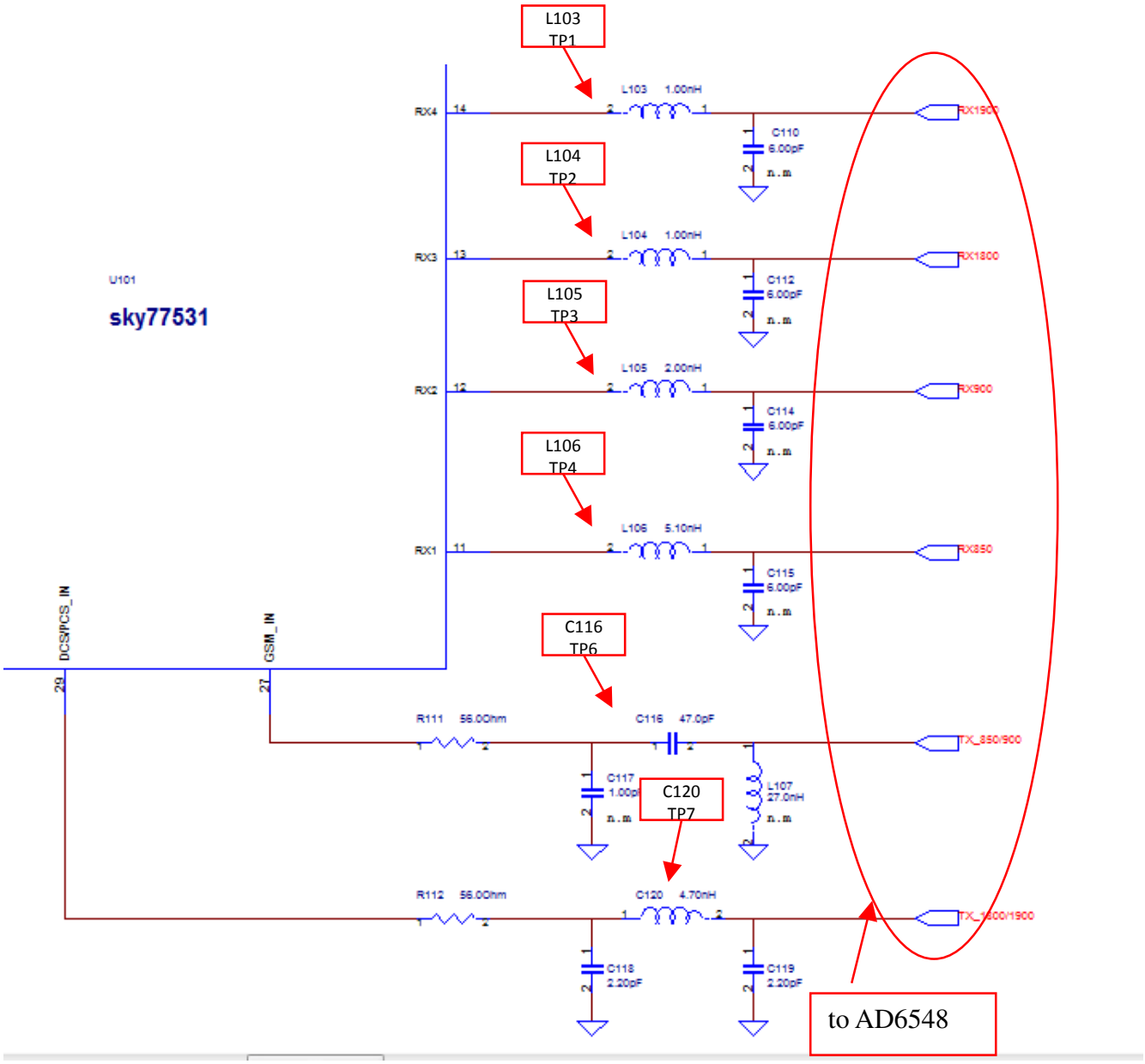
RFJ101 position



4.22.2 Circuit Diagram

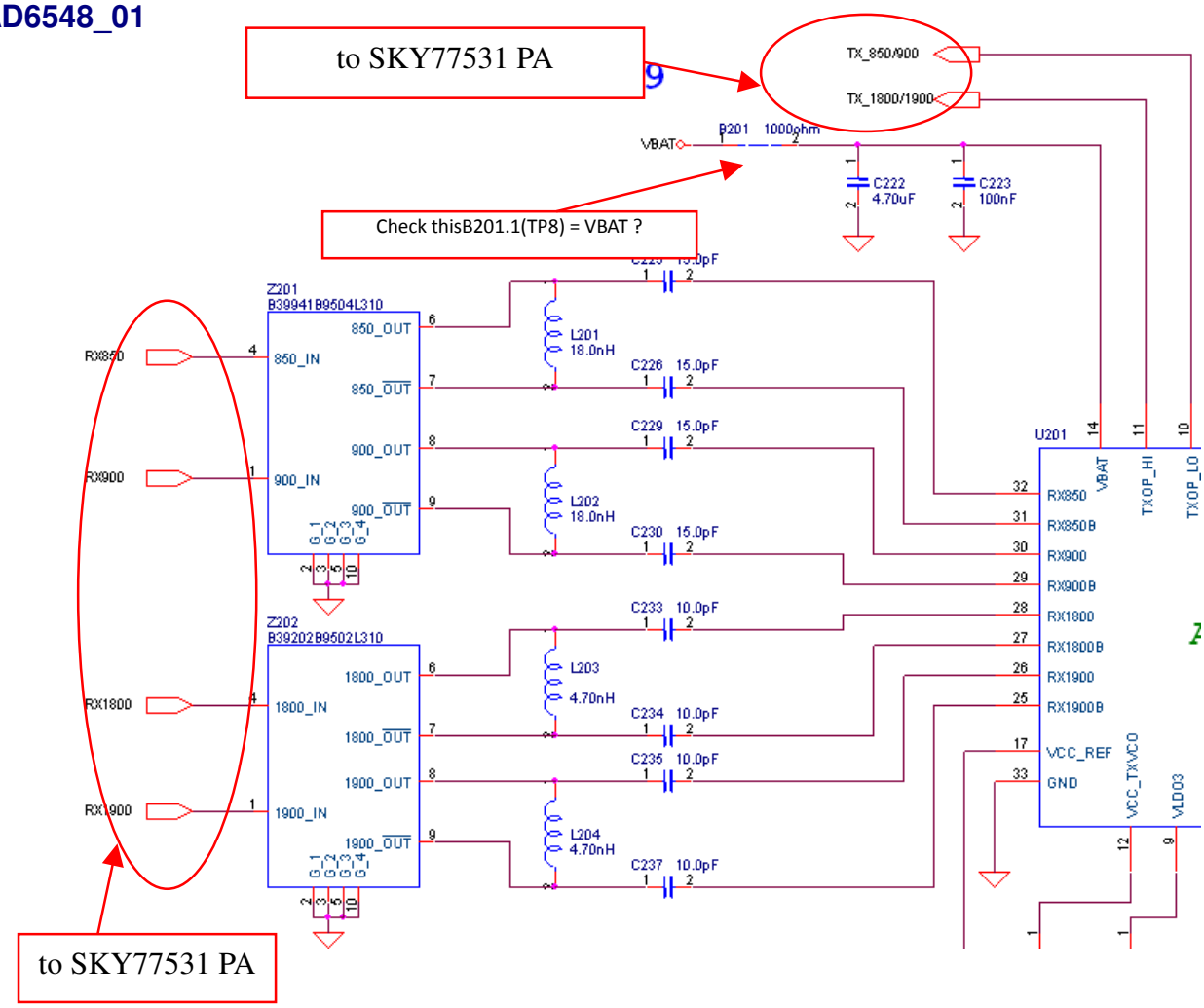
SKY77531(PA)



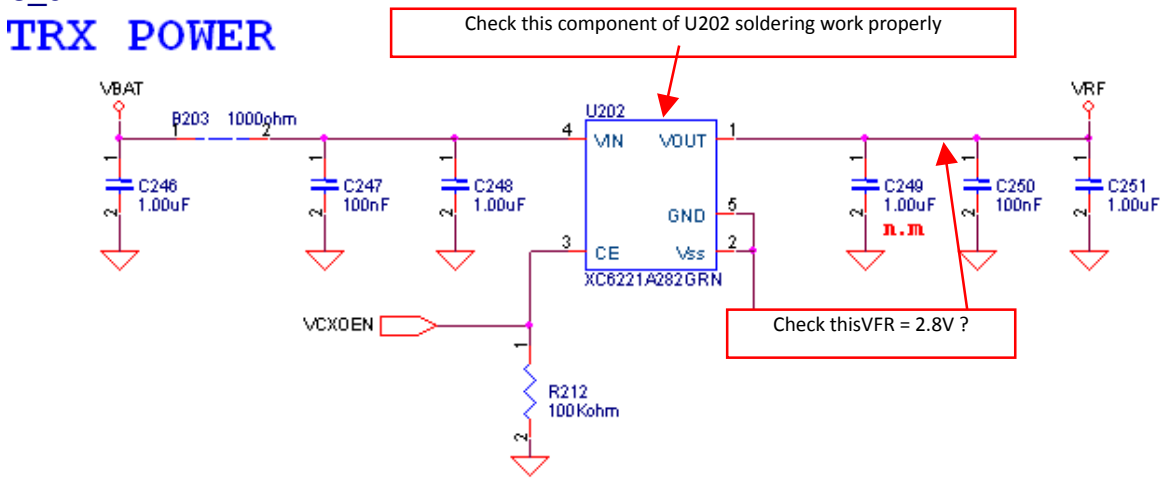

L103
TP1
L104
TP2
L105
TP3
L106
TP4
C116
TP6
C120
TP7
U101
sky77531
RX4
RX3
RX2
RX1
L103 1.00nH
L104 1.00nH
L105 2.00nH
L106 5.10nH
C110 6.00pF n.m
C112 6.00pF n.m
C114 6.00pF n.m
C115 6.00pF n.m
RX1900
RX1800
RX900
RX850
DCS/PCS_IN
GSM_IN
R111 56.0Ohm
C116 47.0pF
C117 1.00pF n.m
L107 27.0nH n.m
TX_850/900
R112 56.0Ohm
C120 4.70nH
C118 2.20pF
C119 2.20pF
to AD6548

AD6548 (TRANSCEIVER)

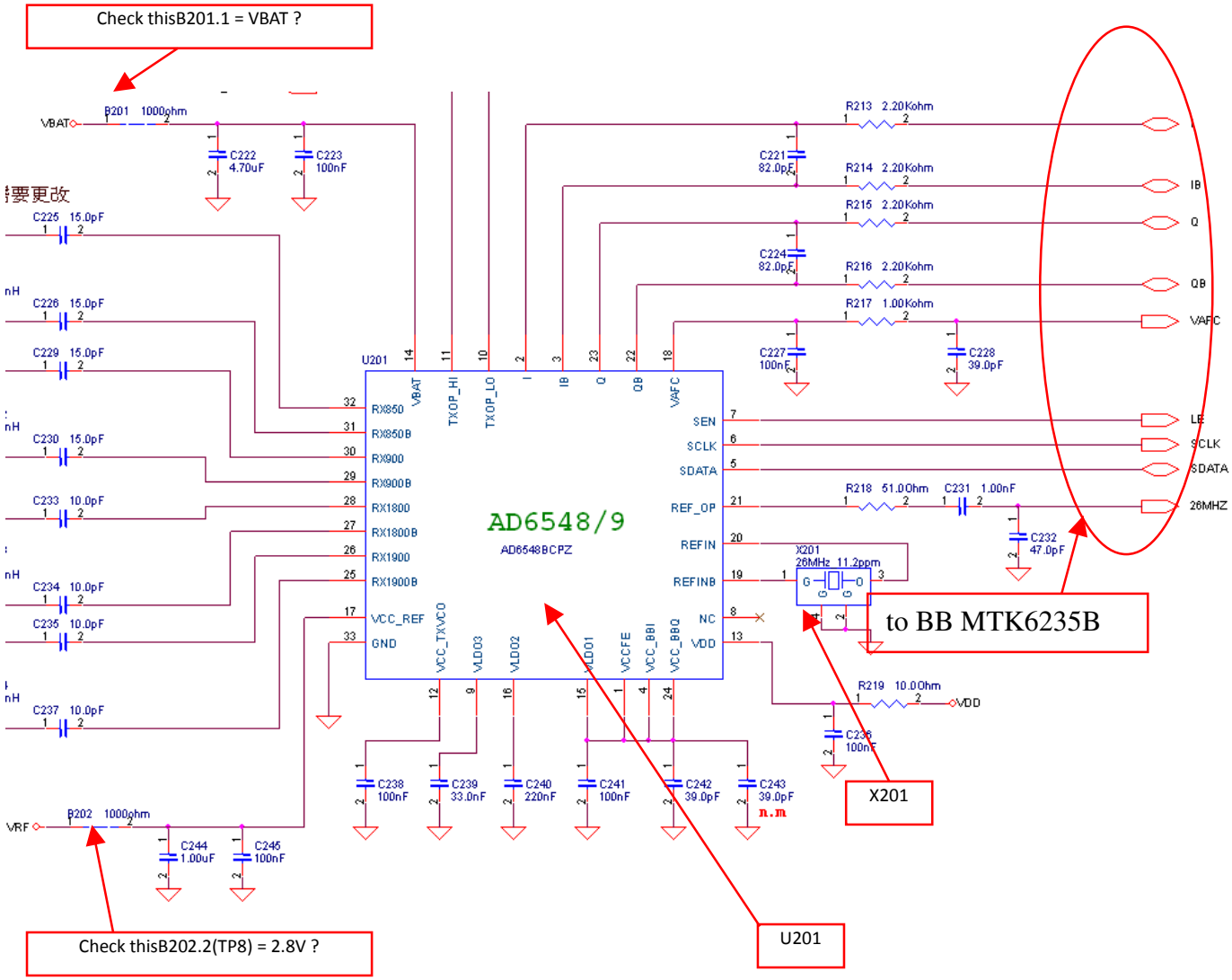
AD6548_01



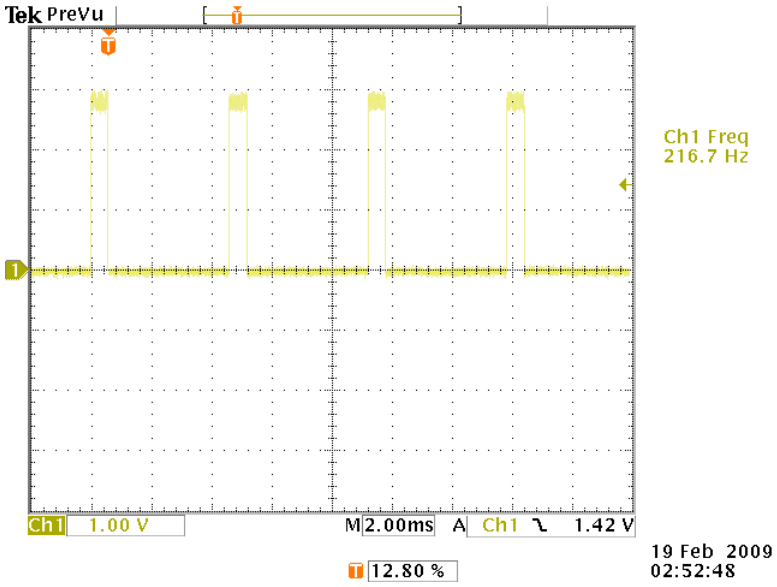
AD6548_02



AD6548_03

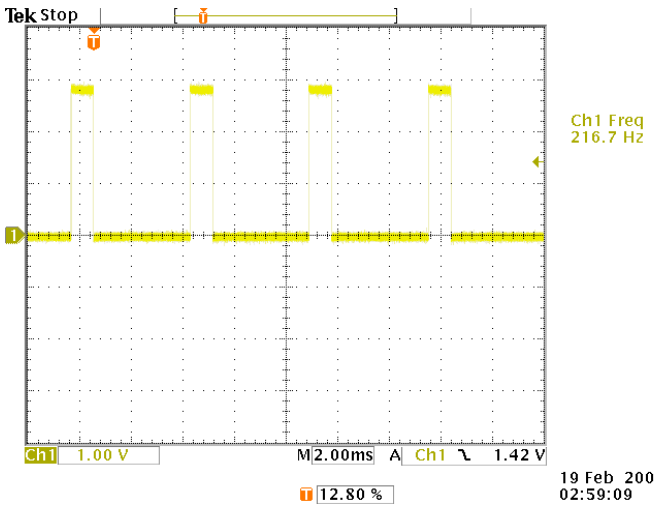

Check thisB201.1 = VBAT ?
VBAT
B201 1000ohm
C222 4.70uF
C223 100nF
U201
AD6548/9
AD6548BCPZ
VBAT
TXOP_HI
TXOP_LO
I
IB
Q
QB
VAFC
RX850
RX850B
RX900
RX900B
RX1800
RX1800B
RX1900
RX1900B
VCC_REF
GND
VCC_TXVCO
VLDO3
VLDO2
VLDO1
VCCFE
VCC_BBI
VCC_BBQ
NC
VDD
SEN
SCLK
SDATA
REF_OP
REFIN
REFINB
R213 2.20Kohm
R214 2.20Kohm
R215 2.20Kohm
R216 2.20Kohm
R217 1.00Kohm
C221 82.0pF
C224 82.0pF
C227 100nF
C228 39.0pF
R218 51.0Ohm
C231 1.00nF
C232 47.0pF
X201 26MHz 11.2ppm
R219 10.0ohm
C236 100nF
C225 15.0pF
C226 15.0pF
C229 15.0pF
C230 15.0pF
C233 10.0pF
C234 10.0pF
C235 10.0pF
C237 10.0pF
C238 100nF
C239 33.0nF
C240 220nF
C241 100nF
C242 39.0pF
C243 39.0pF
B202 1000ohm
VRF
C244 1.00uF
C245 100nF
to BB MTK6235B
X201
U201
Check thisB202.2(TP8) = 2.8V ?

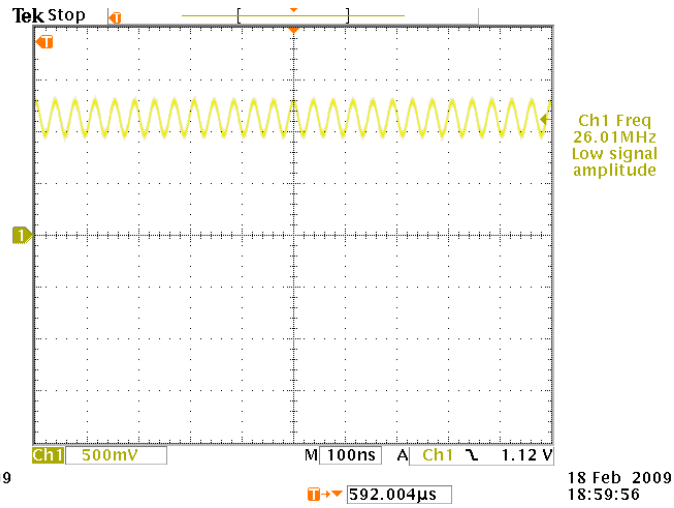
R108.2: 2.8±0.2V(frequency=216.7Hz)



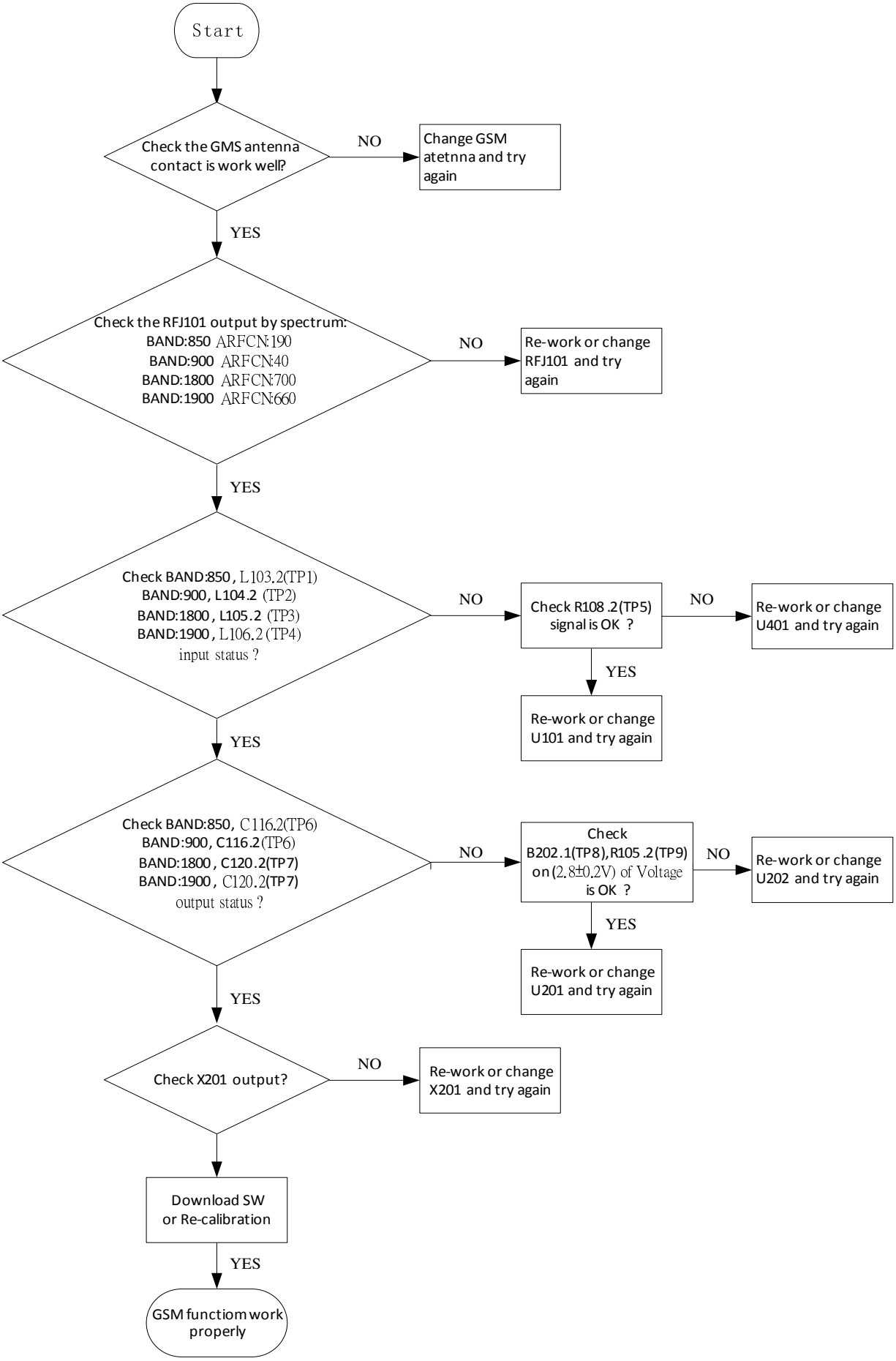
B201 & B202 & R105: 2.8±0.2V

2.8±0.2V(frequency=216.7Hz) X201: 26MHz



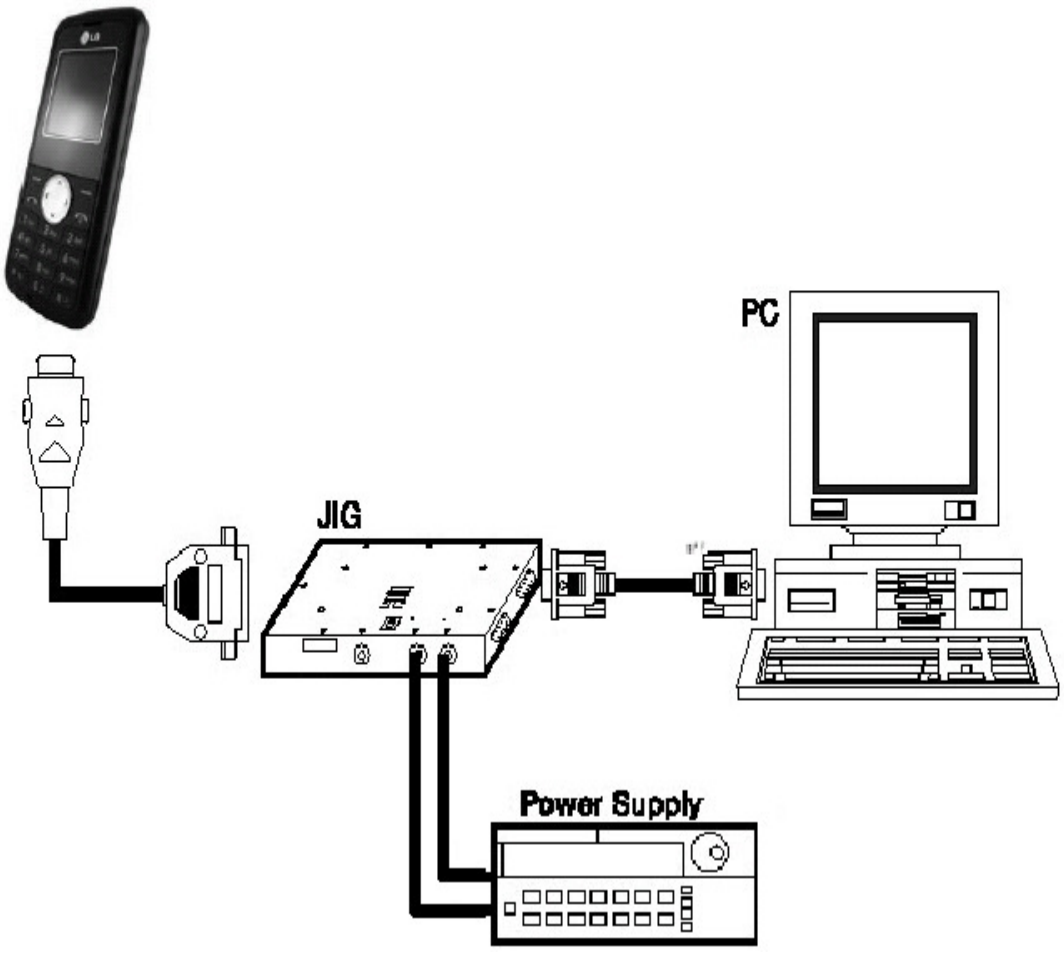


4.22.3 Checking Flow



5.DOWNLOAD

5.1 Download setup



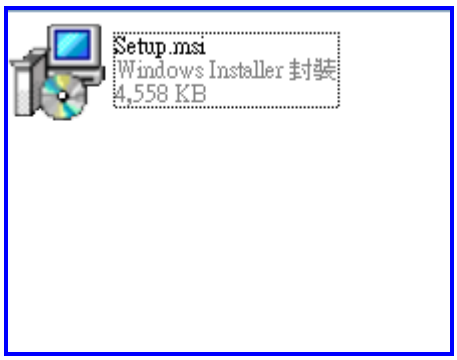
5.2 Download process

■ Tools

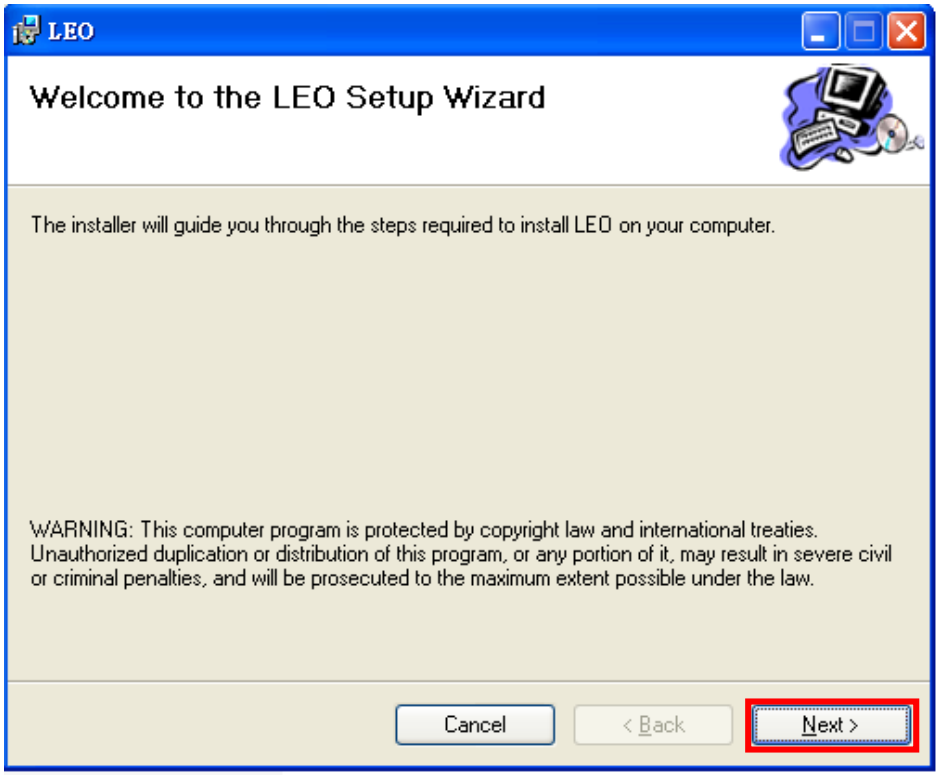
1. Download cable(Prolific USB-to-Serial)
2. PC
3. Battery (3.8 V Li-ion Battery)

■ How to installation Leo download tool

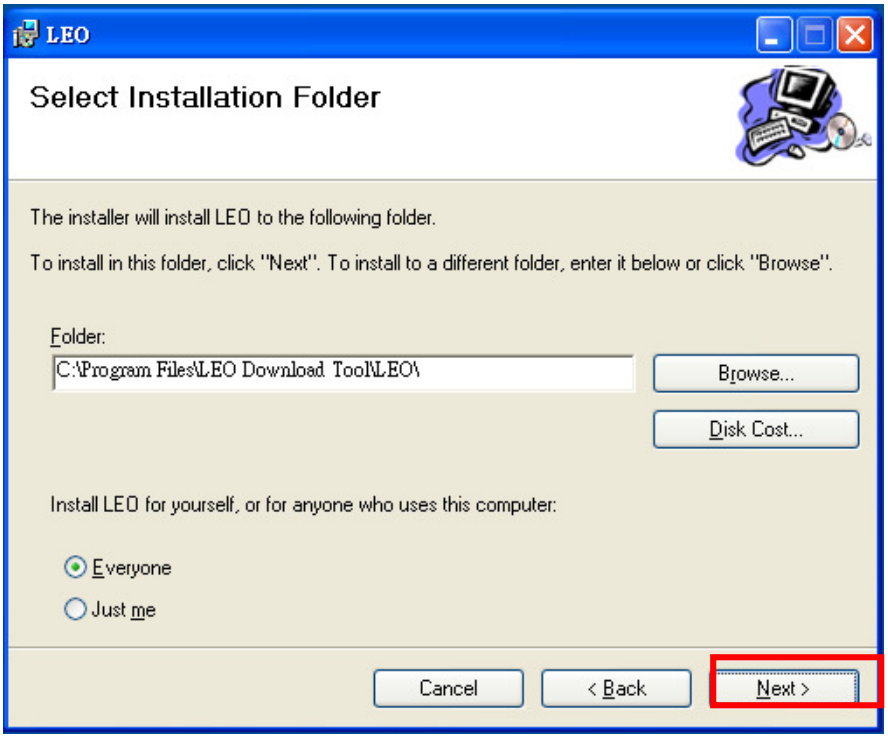
1. You must install “Prolific USB-to-Serial Comm Port” driver first before installing this program, and then double click the “Setup.msi” start installation.



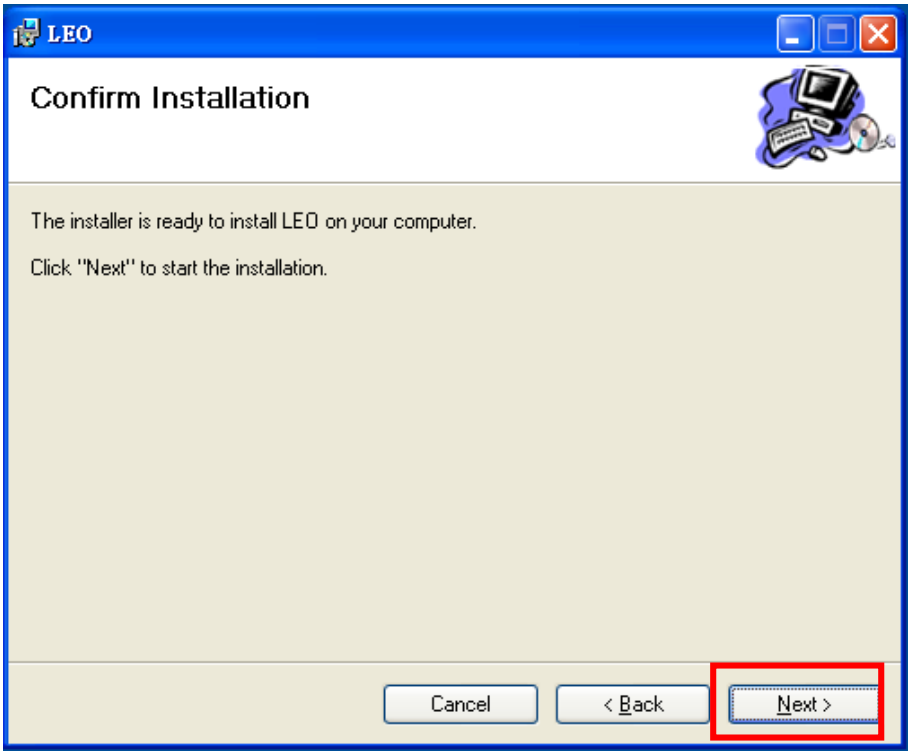
2.You can see the below picture, and then click the “Next” button.



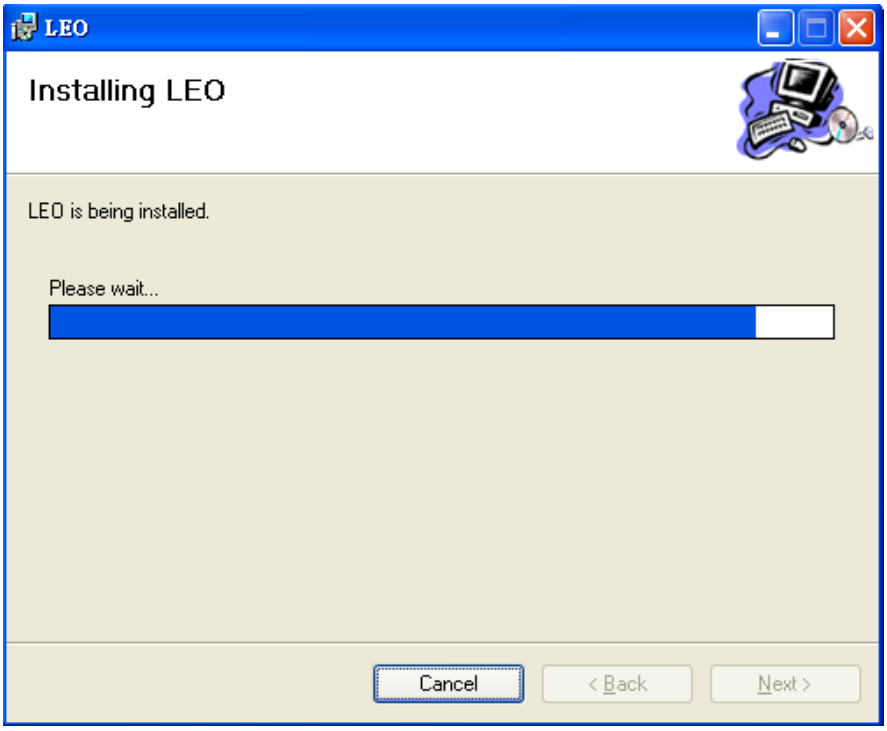
3.You can see the below picture, and then click the “Next” button.

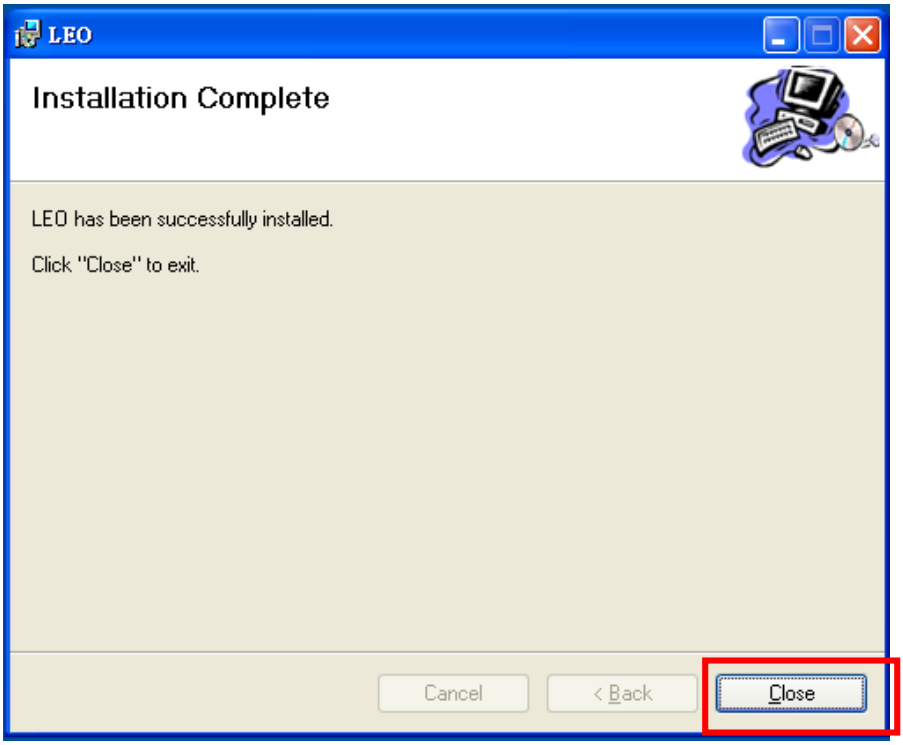


4. You can see the below picture, and then click the “Next” button.



5. You can see the below Installing picture, and then click the “Close” button installation complete.



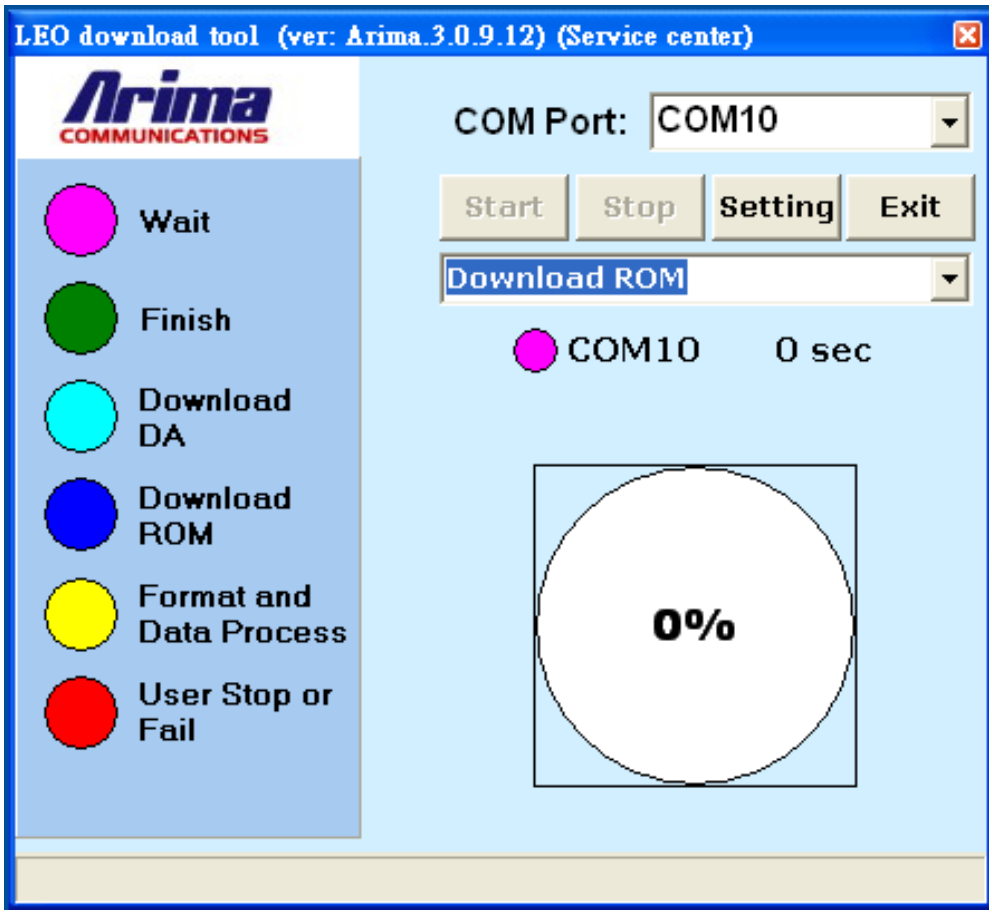


■ How to user Leo download tool

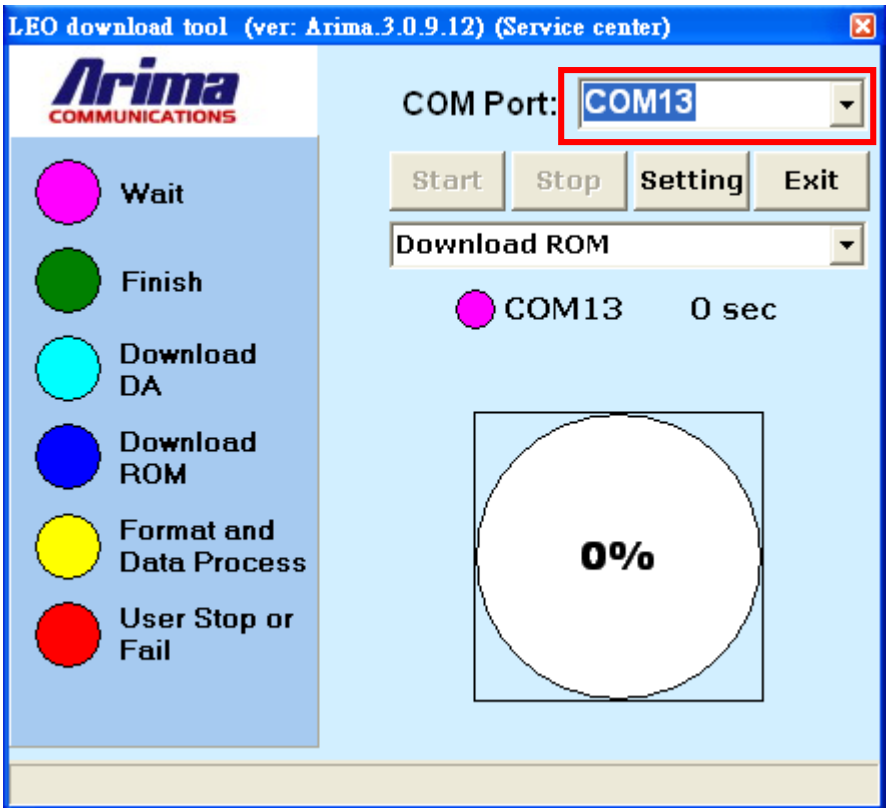
For example: GX200-00-V09A-404-XX-OCT-09-2009

1.Connect Download cable with computer, and then double click the" **LEO Download Tool**".

2.you can see the below picture.



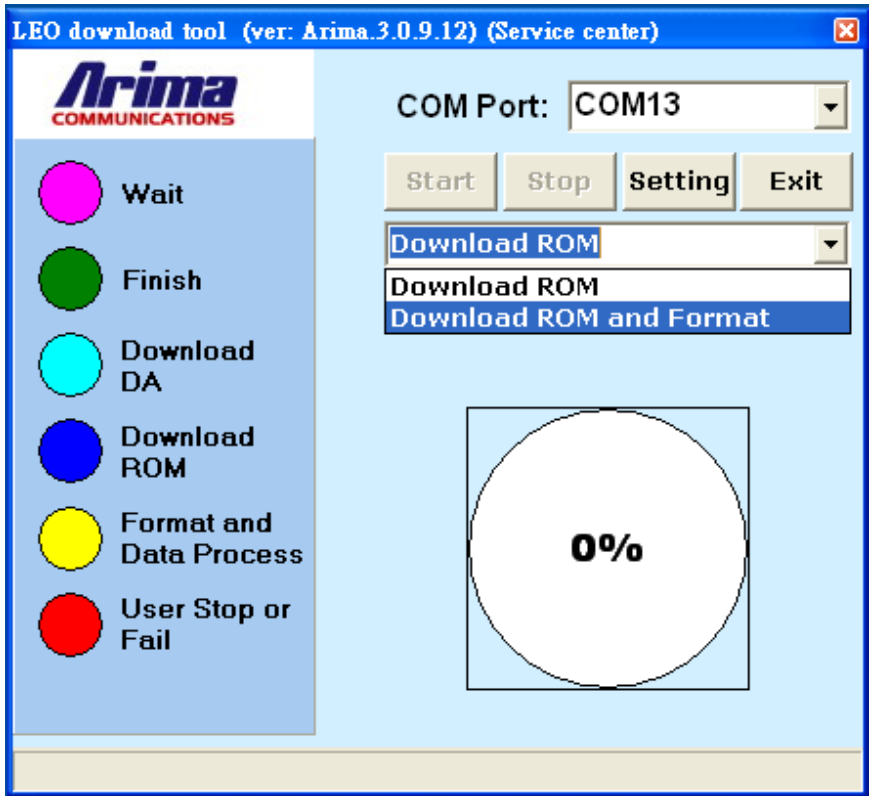
3.Select COM port (LEO will auto detect COM port)



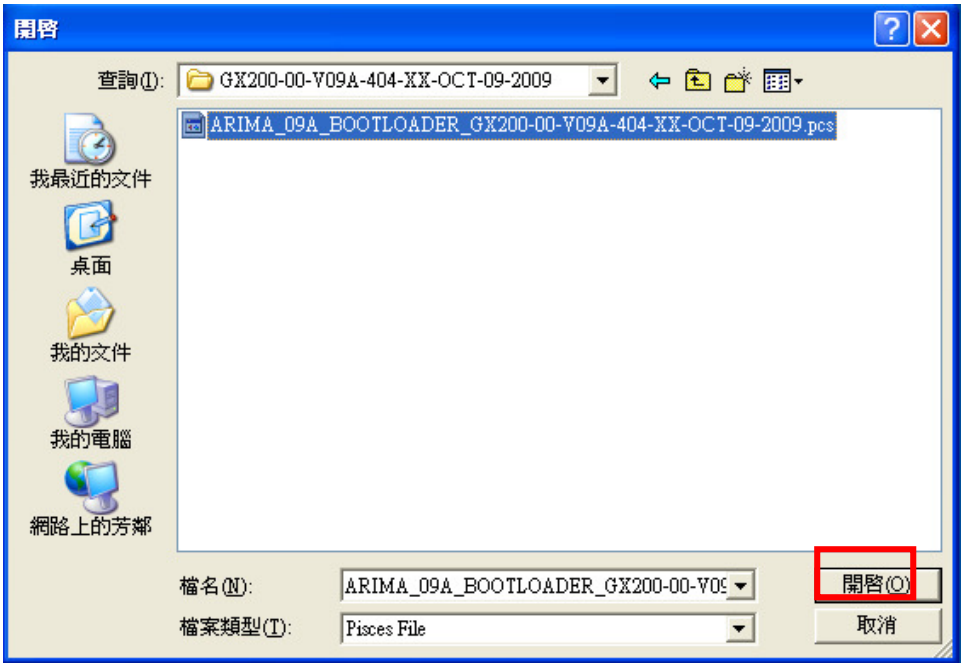
4.Select Download mode.

Note:① If you select "**Download ROM**", it will download software only.

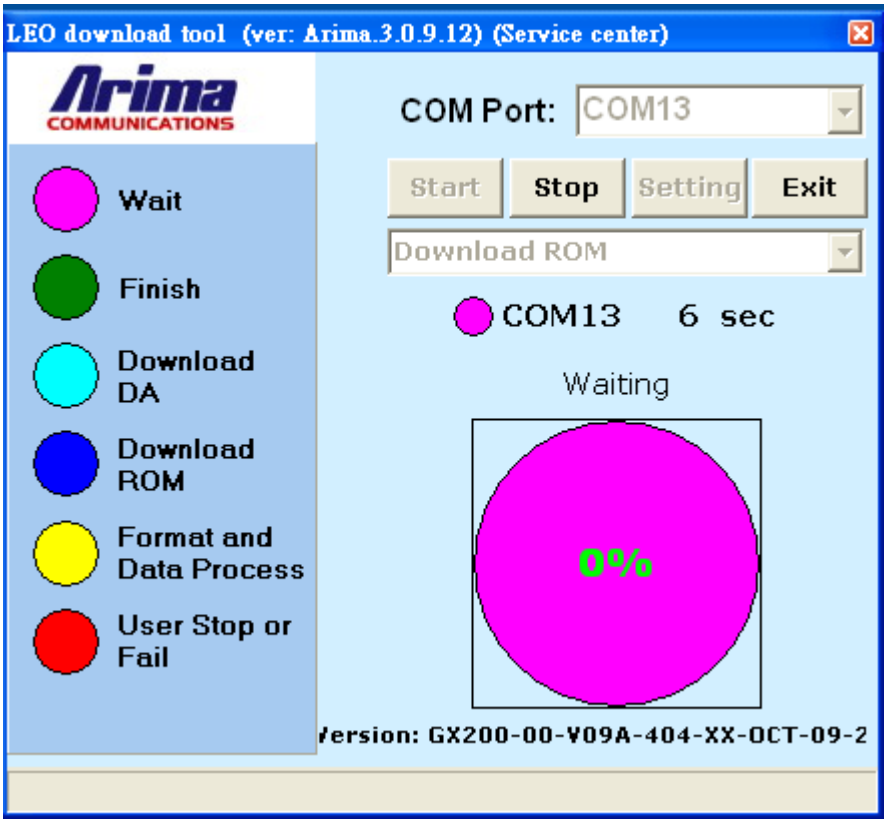
② If you select "**Download ROM and Format",** it will download software and delete NVRAM all data except calibration data and IMEI number, and delete user disk data include contact information 、message etc, also it still will reset META_NVRAM to factory default.



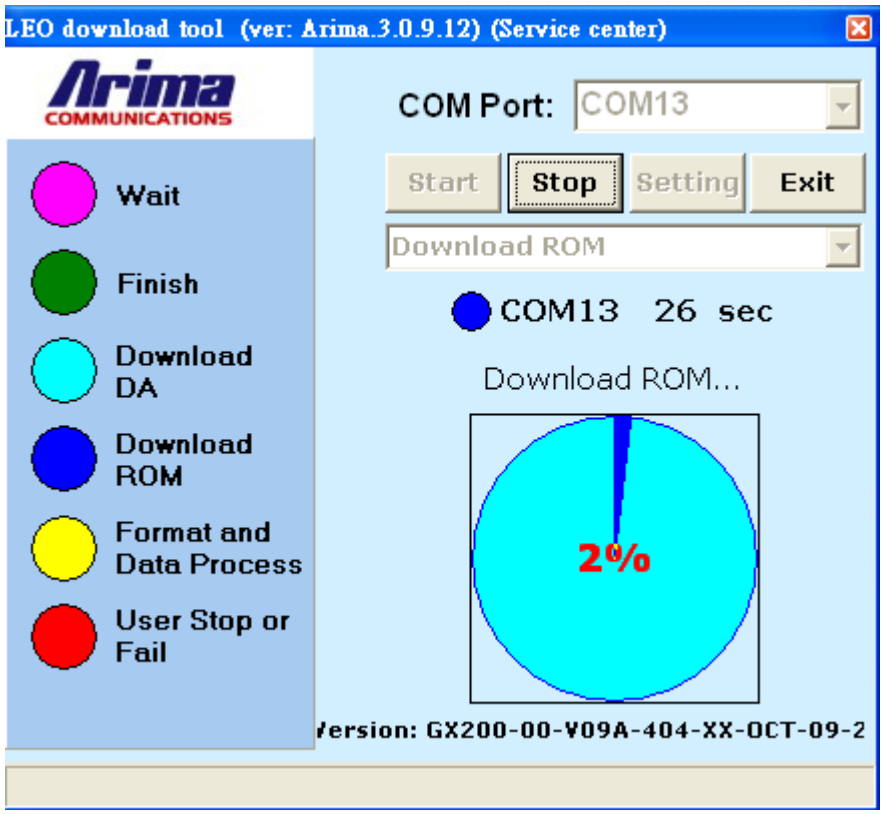
5.Click the “Setting” button and select a valid file. The file always be end of “.PCS”, reference below picture.



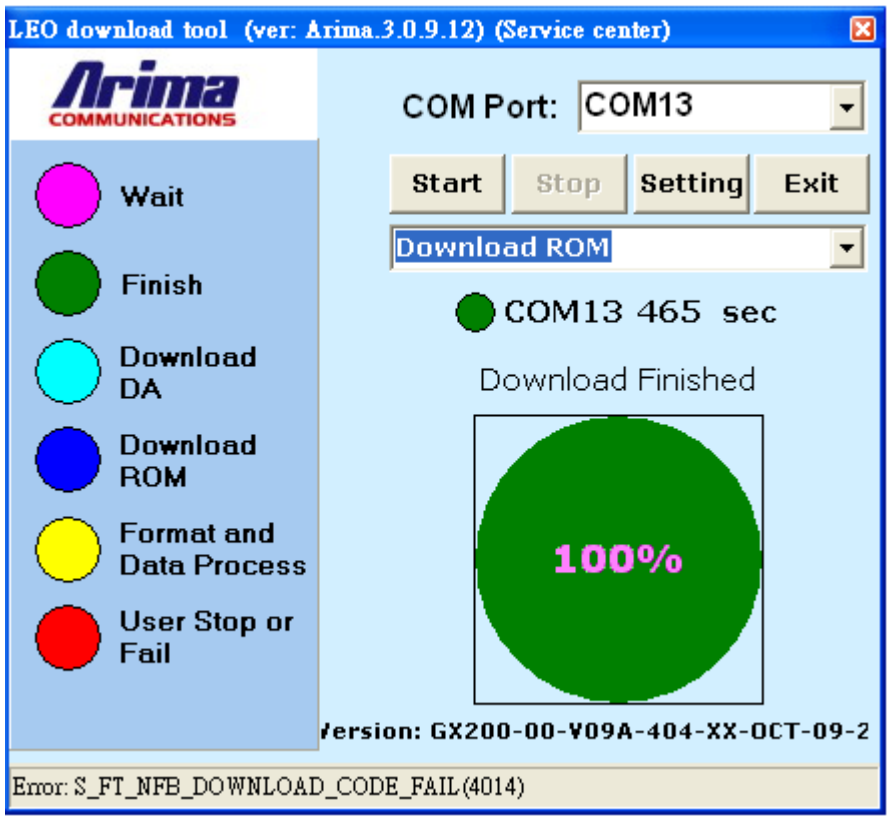
6.Select the “. PCS “file and press open, you can see following picture.



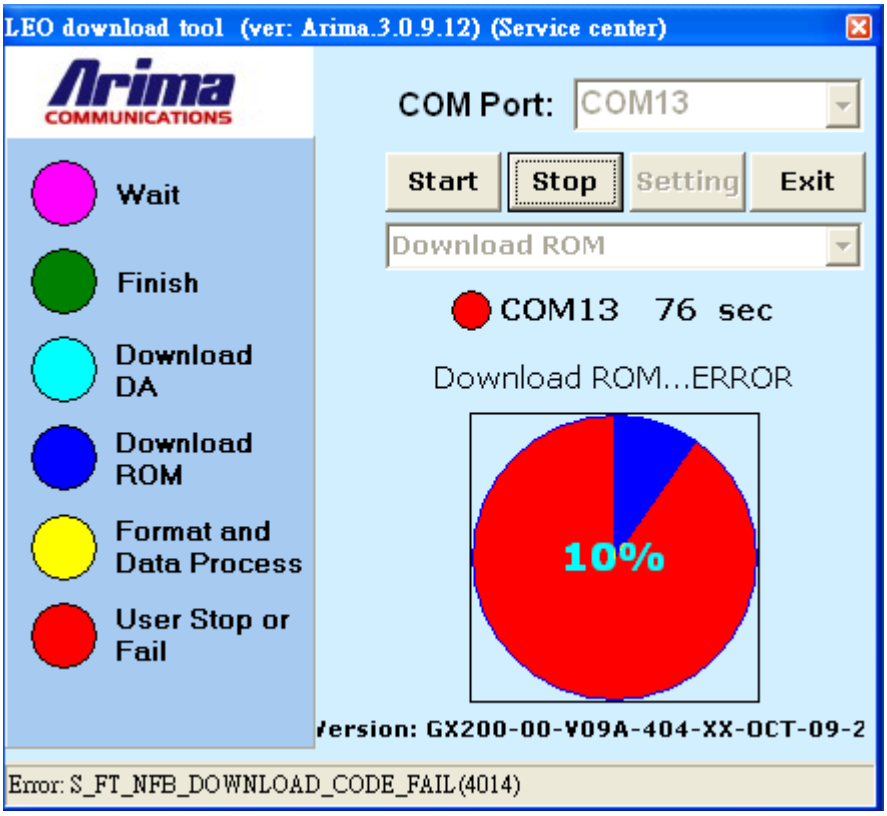
7.After you see the pink cycle, connect download cable with handset, and then press the power key , you will see below picture.



8.After reach to 100%, SW download finish.

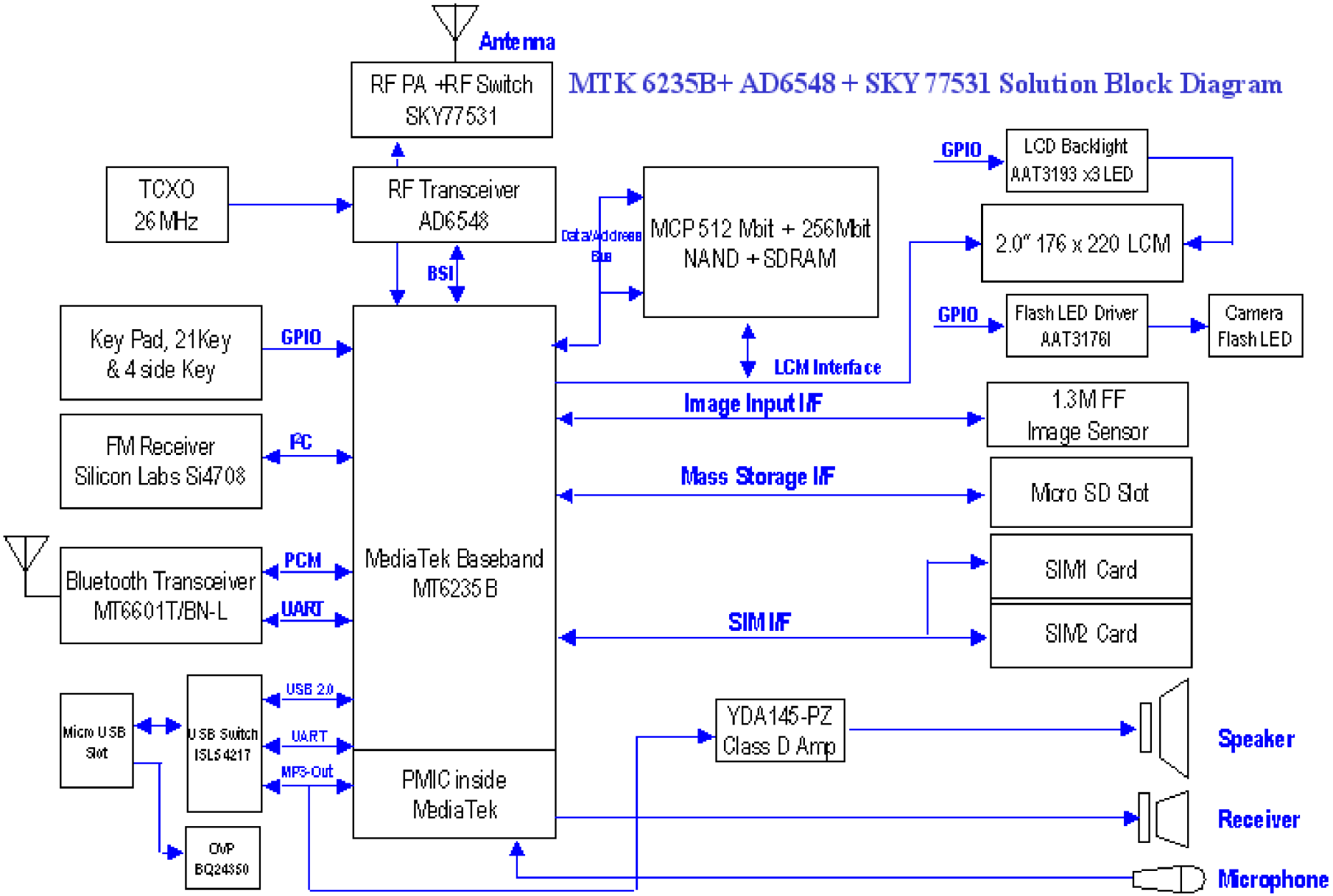


9.If download failed, you will see the below picture.

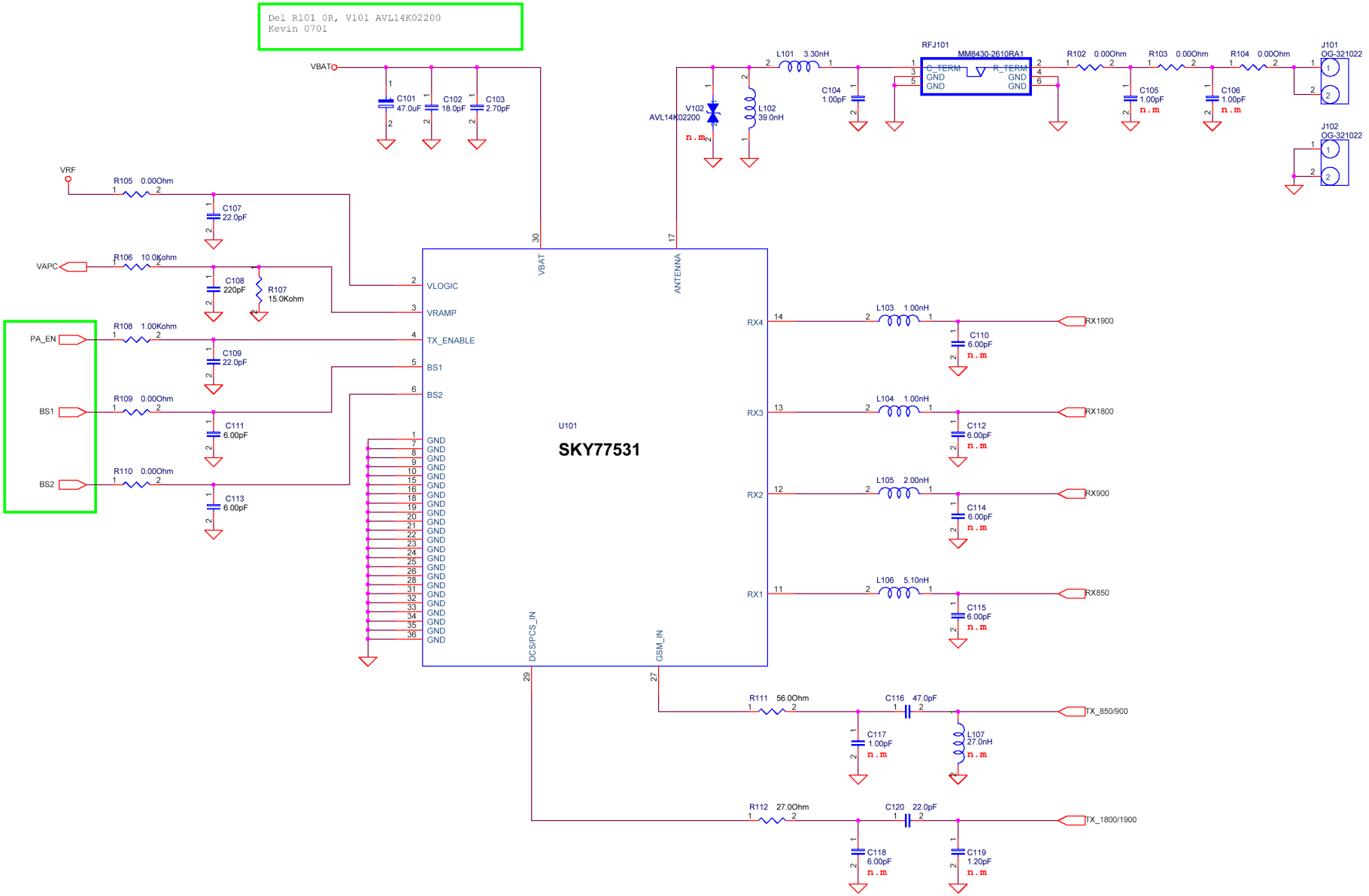


Attention: If appear failed image, Please try close LEO and try open again.

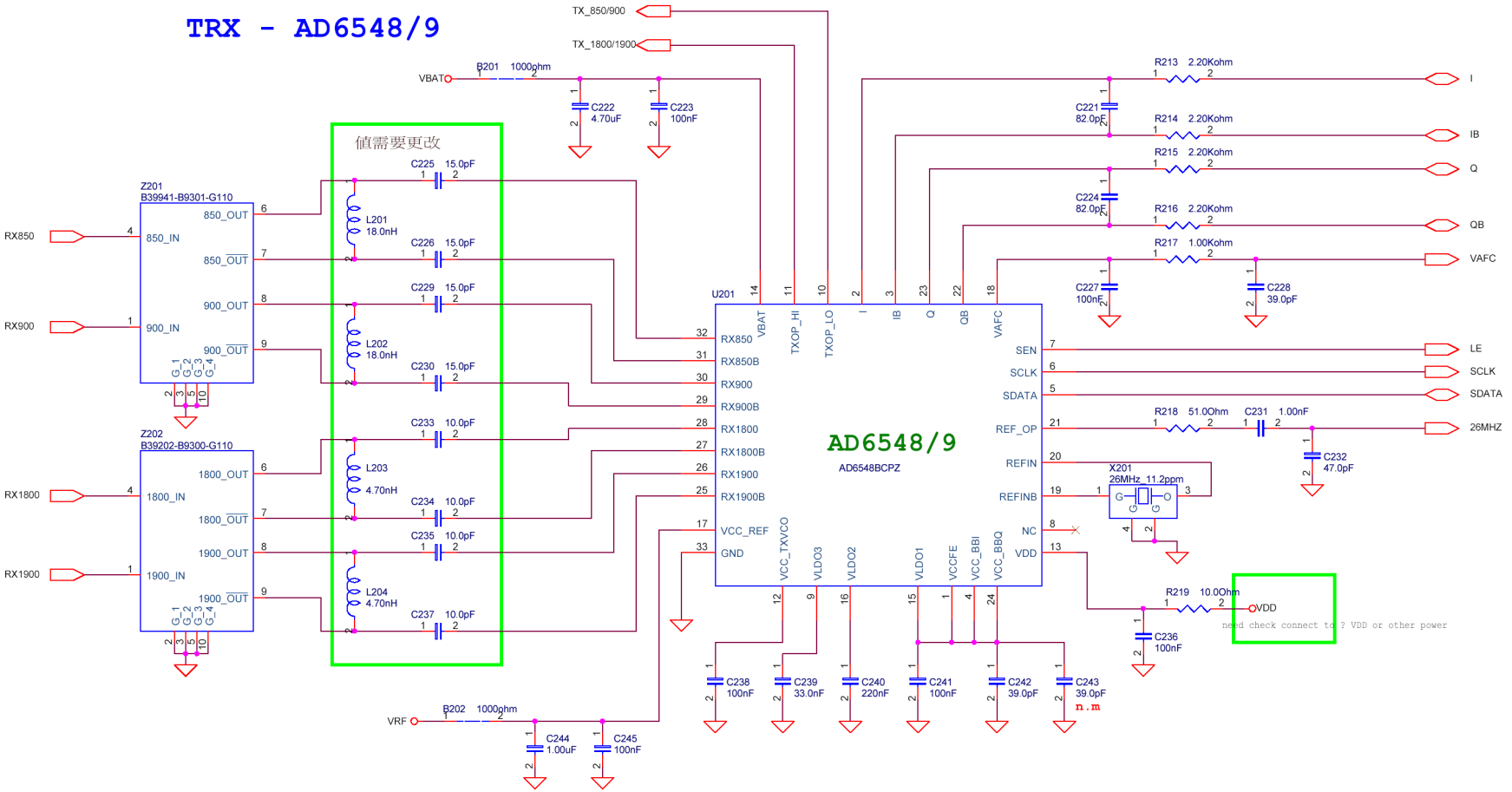
6. BLOCK DIAGRAM



7. CIRCUIT DIAGRMA

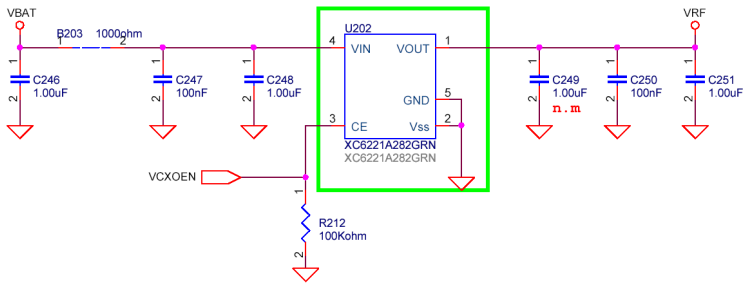


TRX - AD6548/9



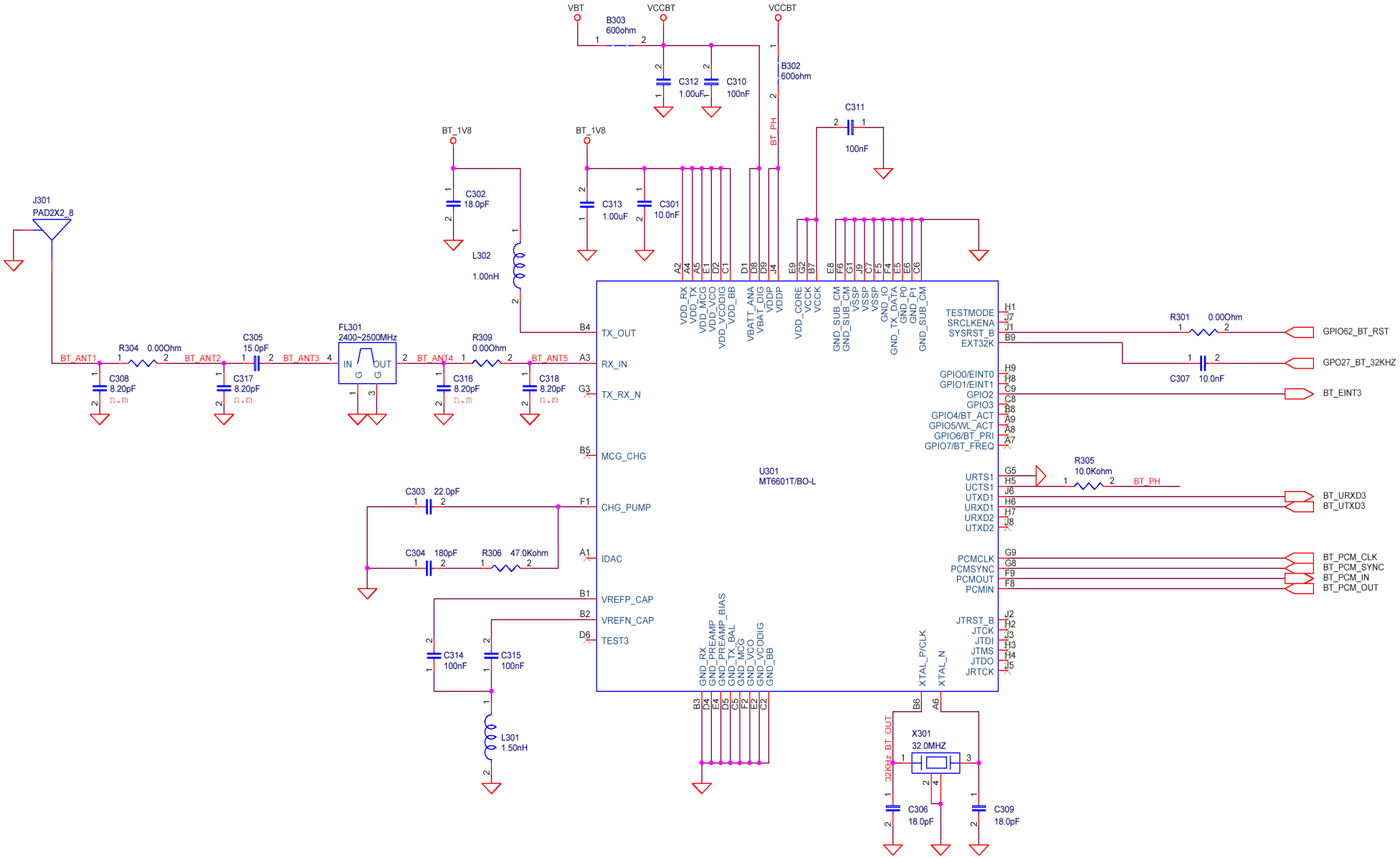
TRX POWER

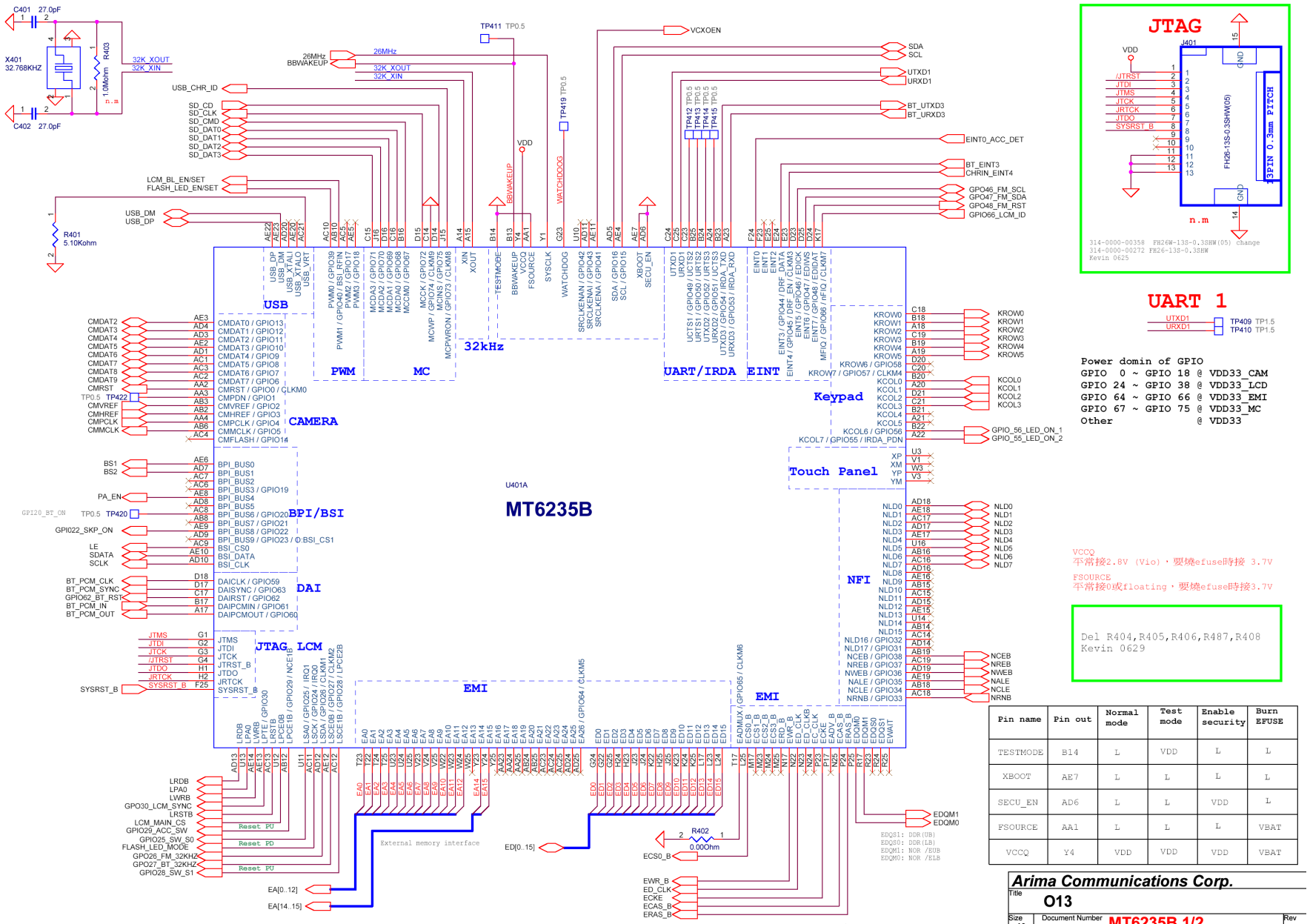
need check U202 parts approval issue



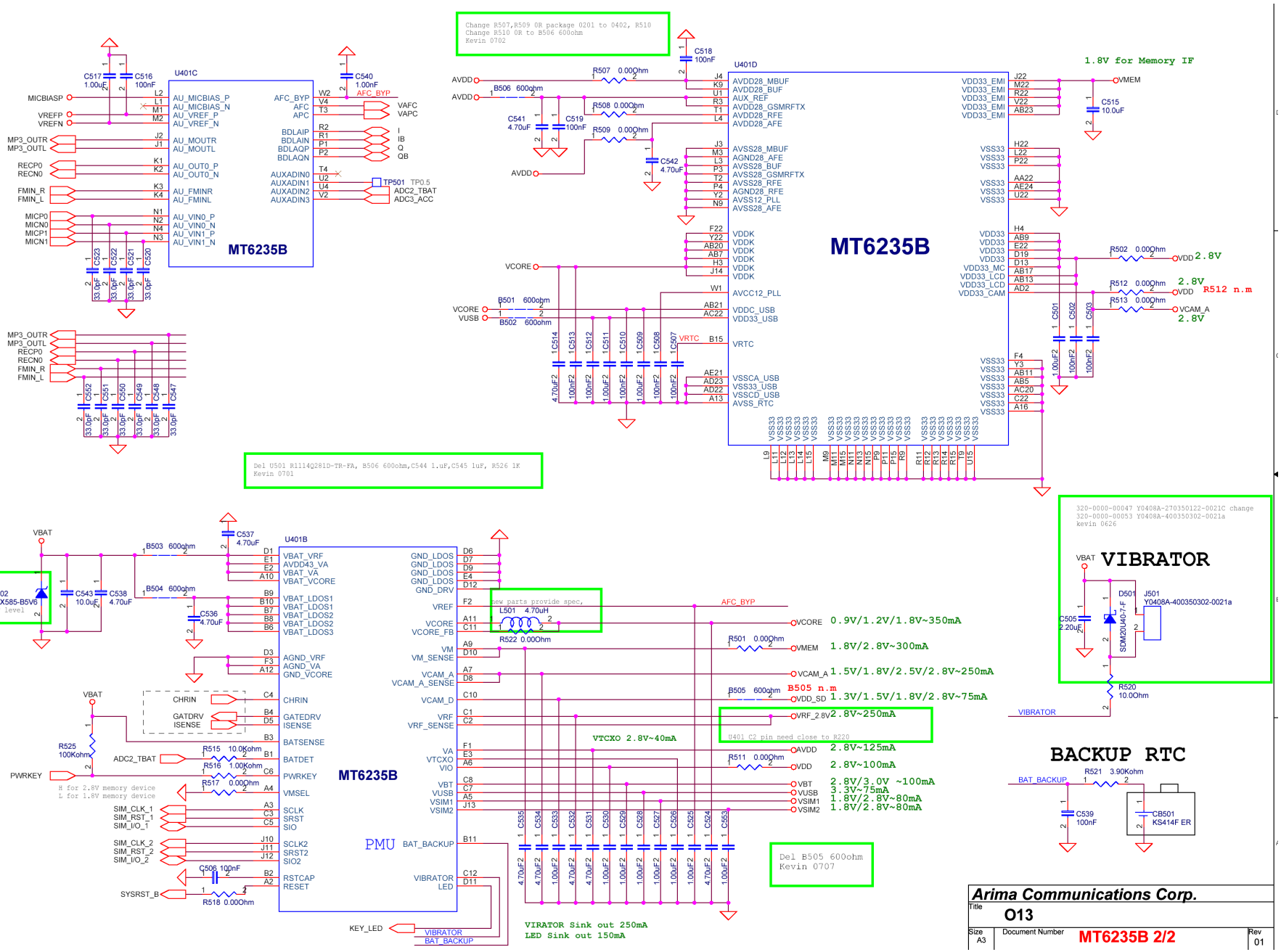
Arima Communicatio

Title

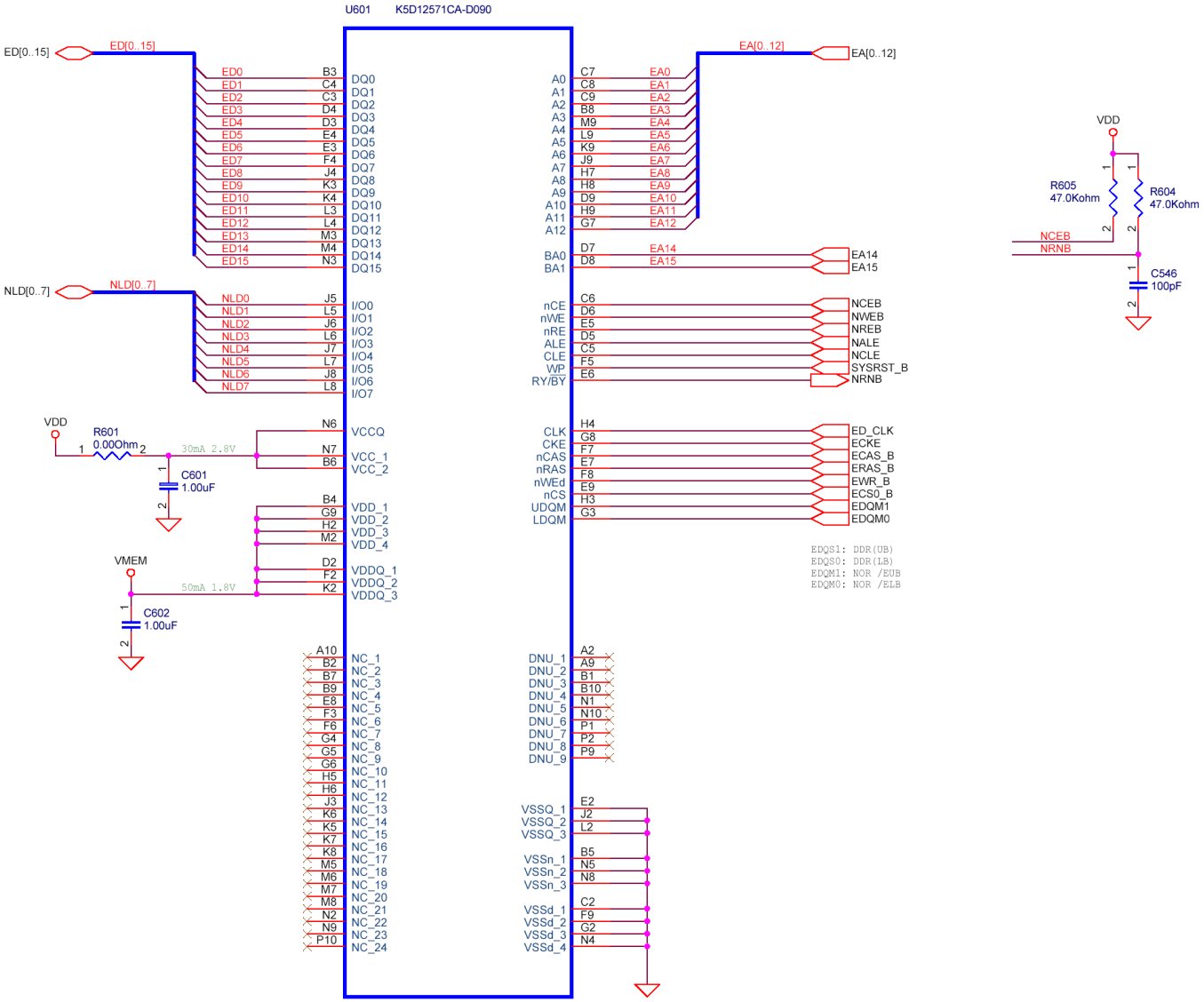

VBT
VCCBT
VCCBT
B303
600ohm
C312
1.00uF
C310
100nF
B302
600ohm
BT_PH
C311
100nF
BT_1V8
BT_1V8
C302
18.0pF
L302
1.00nH
C313
1.00uF
C301
10.0nF
J301
PAD2X2_8
BT_ANT1
R304 0.00Ohm
C308
8.20pF
n.m
BT_ANT2
C305
15.0pF
C317
8.20pF
n.m
BT_ANT3
FL301
2400~2500MHz
IN
OUT
BT_ANT4
R309
0.00Ohm
C316
8.20pF
n.m
BT_ANT5
C318
8.20pF
n.m
B4 TX_OUT
A3 RX_IN
G3 TX_RX_N
B5 MCG_CHG
F1 CHG_PUMP
A1 IDAC
B1 VREFP_CAP
B2 VREFN_CAP
D6 TEST3
C303 22.0pF
C304 180pF
R306 47.0Kohm
C314
100nF
C315
100nF
L301
1.50nH
U301
MT6601T/BO-L
VDD_RX
VDD_TX
VDD_MCG
VDD_VCO
VDD_VCODIG
VDD_BB
VBATT_ANA
VBAT_DIG
VDDP
VDDP
VDD_CORE
VCCK
VCCK
GND_SUB_CM
GND_SUB_CM
VSSP
VSSP
VSSP
GND_IO
GND_TX_DATA
GND_P0
GND_P1
GND_SUB_CM
TESTMODE
SRCLKENA
SYSRST_B
EXT32K
GPIO0/EINT0
GPIO1/EINT1
GPIO2
GPIO3
GPIO4/BT_ACT
GPIO5/WL_ACT
GPIO6/BT_PRI
GPIO7/BT_FREQ
URTS1
UCTS1
UTXD1
URXD1
URXD2
UTXD2
PCMCLK
PCMSYNC
PCMOUT
PCMIN
JTRST_B
JTCK
JTDI
JTMS
JTDO
JRTCK
XTAL_P/CLK
XTAL_N
GND_RX
GND_PREAMP
GND_PREAMP_BIAS
GND_TX_BAL
GND_MCG
GND_VCO
GND_VCODIG
GND_BB
R301 0.00Ohm
GPIO62_BT_RST
C307 10.0nF
GPO27_BT_32KHZ
BT_EINT3
R305
10.0Kohm
BT_PH
BT_URXD3
BT_UTXD3
BT_PCM_CLK
BT_PCM_SYNC
BT_PCM_IN
BT_PCM_OUT
X301
32.0MHZ
32KHz_BT_OUT
C306
18.0pF
C309
18.0pF



Pin name	Pin out	Normal mode	Test mode	Enable security	Burn EFUSE
TESTMODE	B14	L	VDD	L	L
XBOOT	AE7	L	L	L	L
SECU_EN	AD6	L	L	VDD	L
FSOURCE	AA1	L	L	L	VBAT
VCCQ	Y4	VDD	VDD	VDD	VBAT


Change R507,R509 OR package 0201 to 0402, R510
Change R510 OR to B506 600ohm
Kevin 0702
U401C
U401D
U401B
MT6235B
MT6235B
MT6235B
1.8V for Memory IF
Del U501 R1114Q281D-TR-FA, B506 600ohm,C544 1.uF,C545 1uF, R526 1K
Kevin 0701
320-0000-00047 Y0408A-270350122-0021C change
320-0000-00053 Y0408A-400350302-0021a
Kevin 0626
VIBRATOR
BACKUP RTC
PMU
new parts provide spec,
U401 C2 pin need close to R220
Del B505 600ohm
Kevin 0707
VTCXO 2.8V~40mA
VIRATOR Sink out 250mA
LED Sink out 150mA
0.9V/1.2V/1.8V~350mA
1.8V/2.8V~300mA
1.5V/1.8V/2.5V/2.8V~250mA
1.3V/1.5V/1.8V/2.8V~75mA
2.8V~250mA
2.8V~125mA
2.8V~100mA
2.8V/3.0V ~100mA
3.3V~75mA
1.8V/2.8V~80mA
1.8V/2.8V~80mA
B505 n.m
R512 n.m
Arima Communications Corp.
O13
MT6235B 2/2

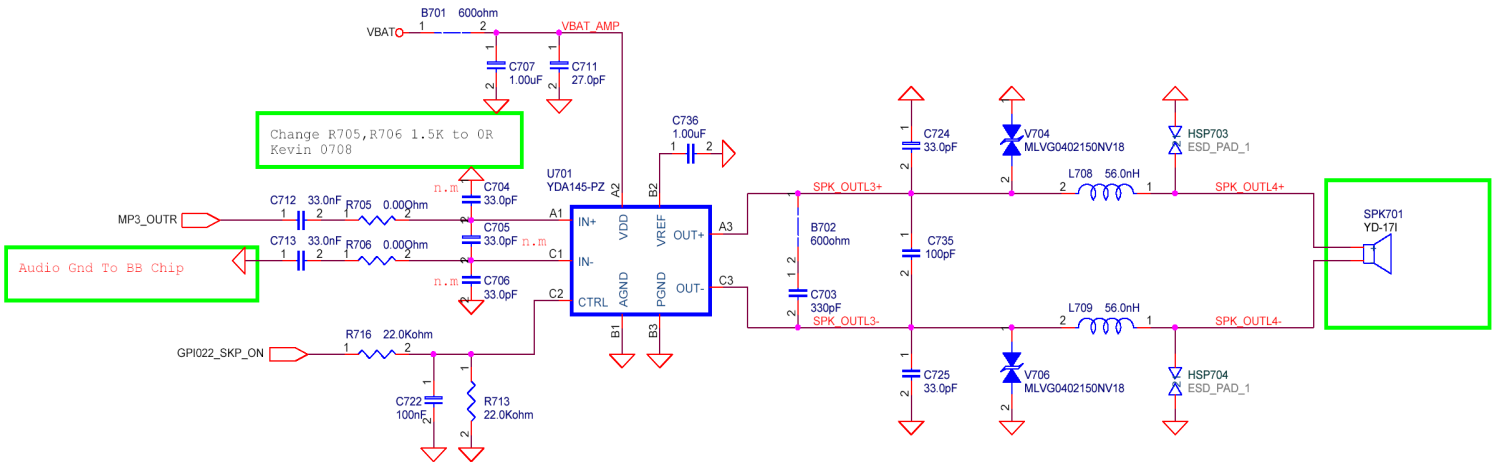
512Mb NAND Flash + 256Mb SDRAM



Numonyx NAND98W3M0 NAND 512M + SDRAM 256M 107-FGBA

Hyinx HYC0UEE0AF2P-3S60E NAND 512M + SDRAM 256M 107-FGBA

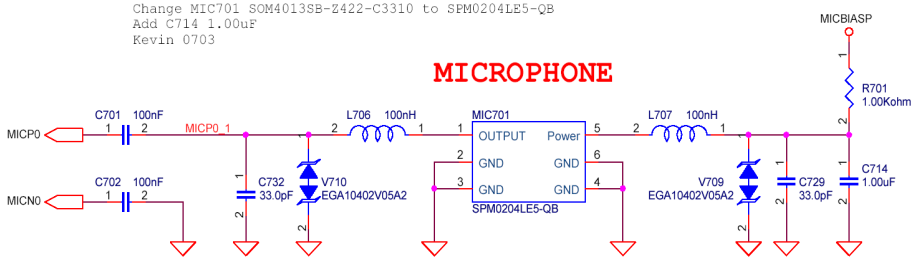
SPEAKER AMPLIFIER



Del R703 1.5K, R704 1.5K, R702 1.0K, C733 10.0uF, C734 100pF
Kevin 0702

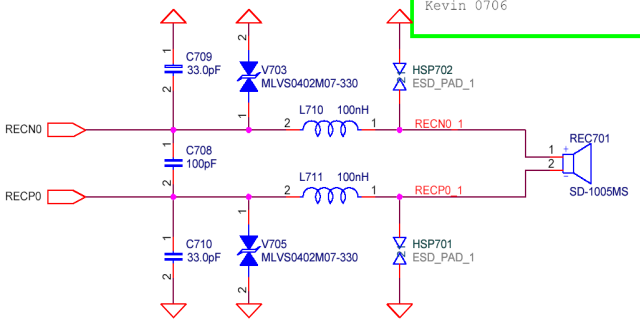
Change MIC701 SOM4013SB-Z422-C3310 to SPM0204LE5-QB
Add C714 1.00uF
Kevin 0703

MICROPHONE

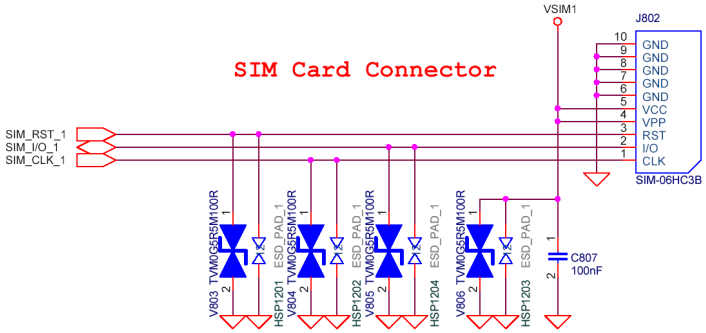


Receiver

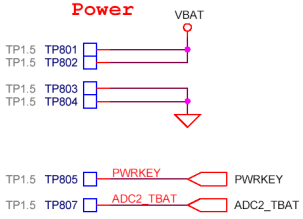
Change REC701 2403-260-00017 to SD-1005MS
Kevin 0706



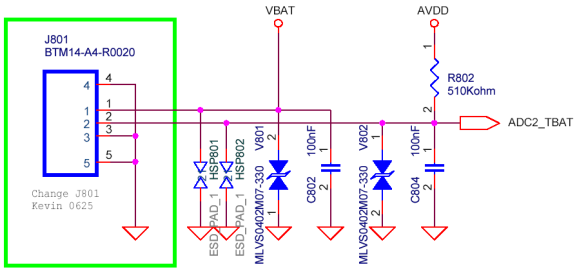
SIM Card Connector



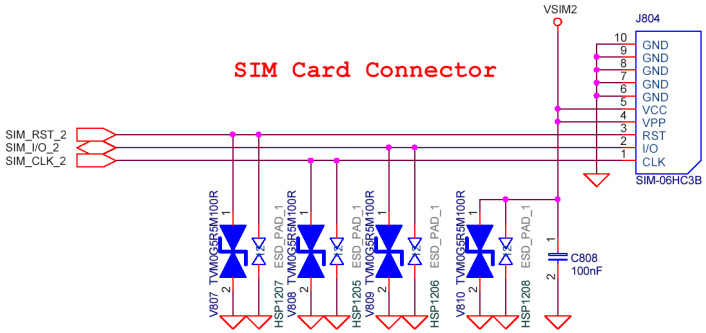
Power

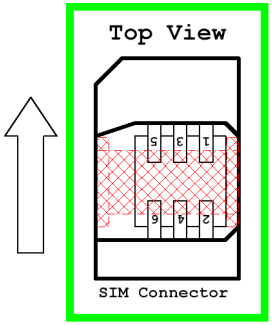


Battery Connector

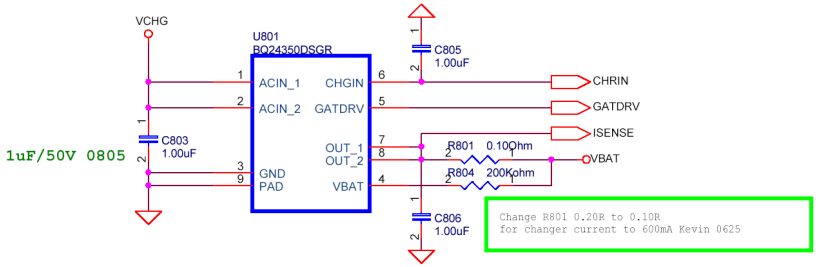


SIM Card Connector



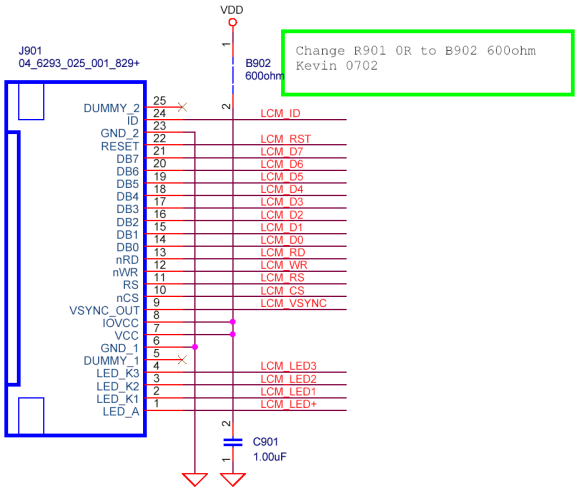


OVP + Charger Circuit BQ24350

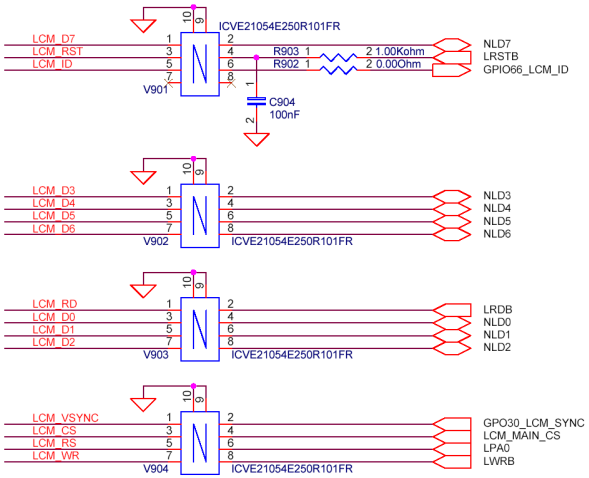


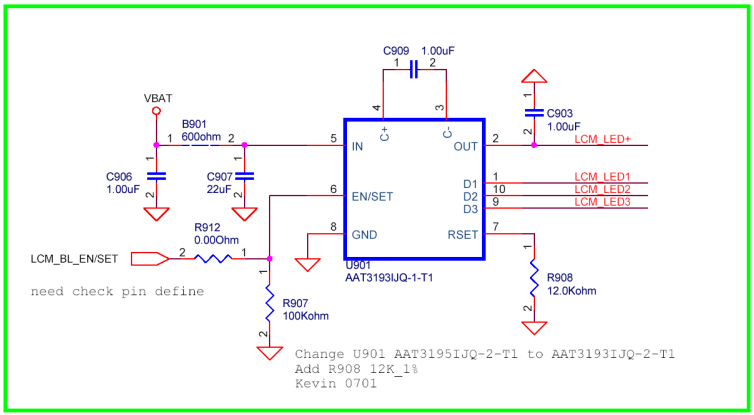
LCM Cnnector

Change J901 LCM 25pin 0.3mm Vendor to KYOCERA
Kevin 0701



Change R903 0R to 1K
Add C904 100nF
Kevin 0701

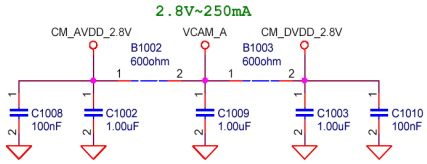




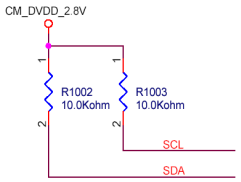
Change U901 AAT3193IJQ-2-T1 to AAT3193IJQ-1-T1
Kevin 0708

Arima Communi
Title

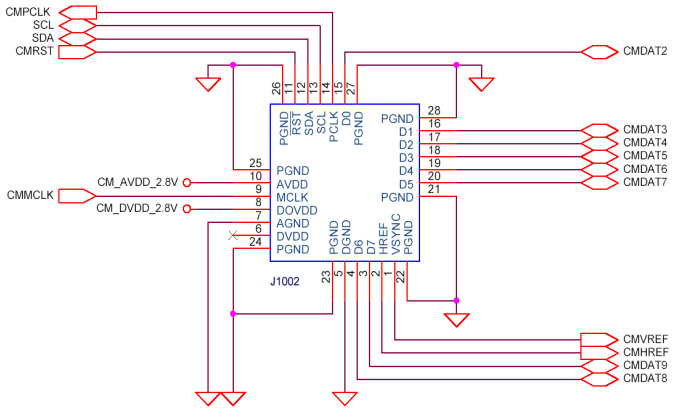
Del B1001 600ohm, C1001 1uF
Kevin 0701



Add C1108,C1010 100nF, C1009 1uF
Kevin 0708



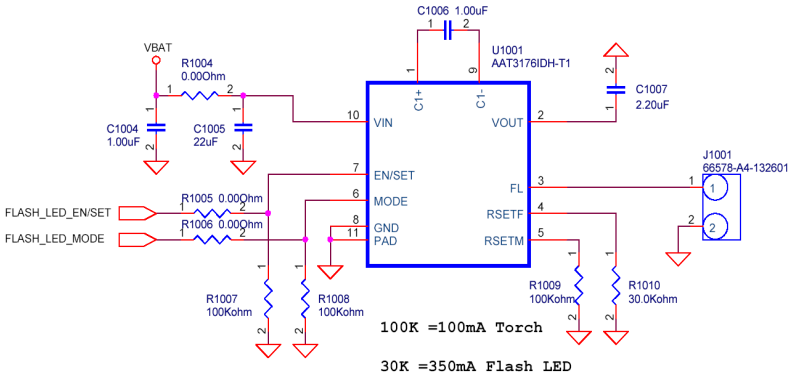
Camera Module 1.3M FF Abico



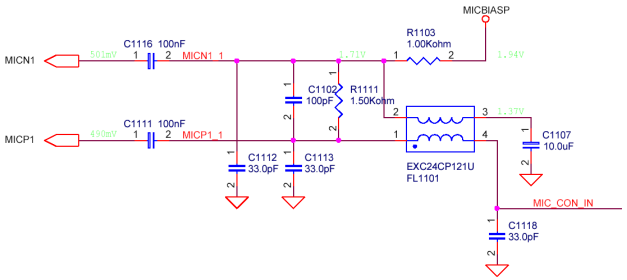
AR16F337 6x6mm

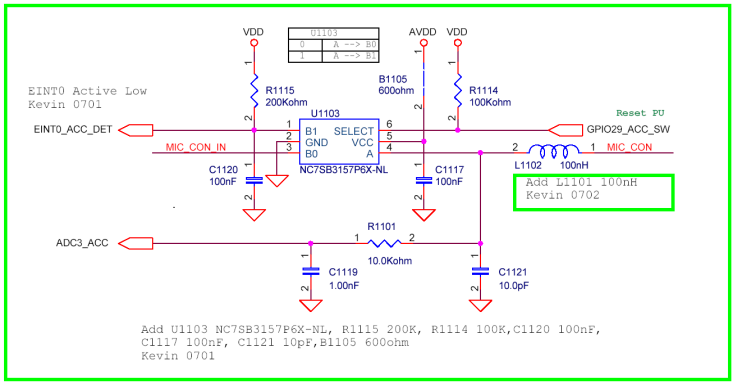
CM_DVDD_2.8V = 2.8V; I= ? 12mA
CM_AVDD_2.8V = 2.8V; I= ? 103mA (82+2+19)
CM_DVDD_1.8V = 1.8V; ? 28mA

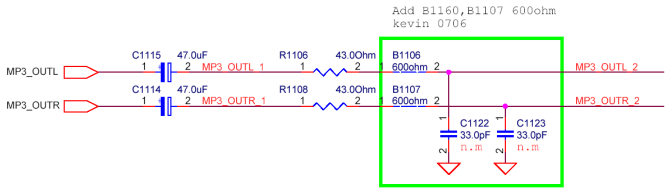
Check new add Circuit
Kevin 0629

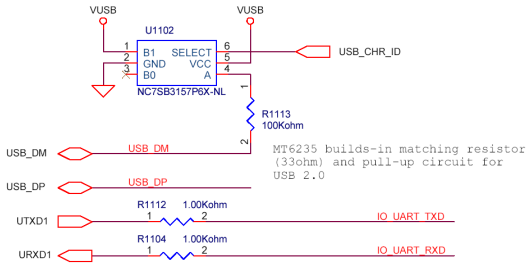


Change J1001 OG-321022 to 66578-A4-132601
Del J1003 OG-321022
Kevin 0706





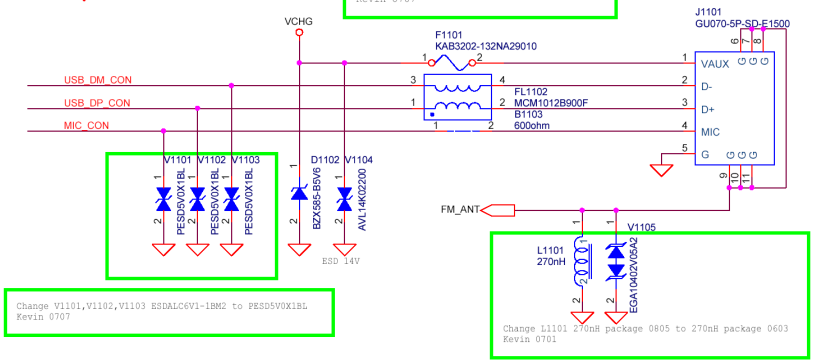


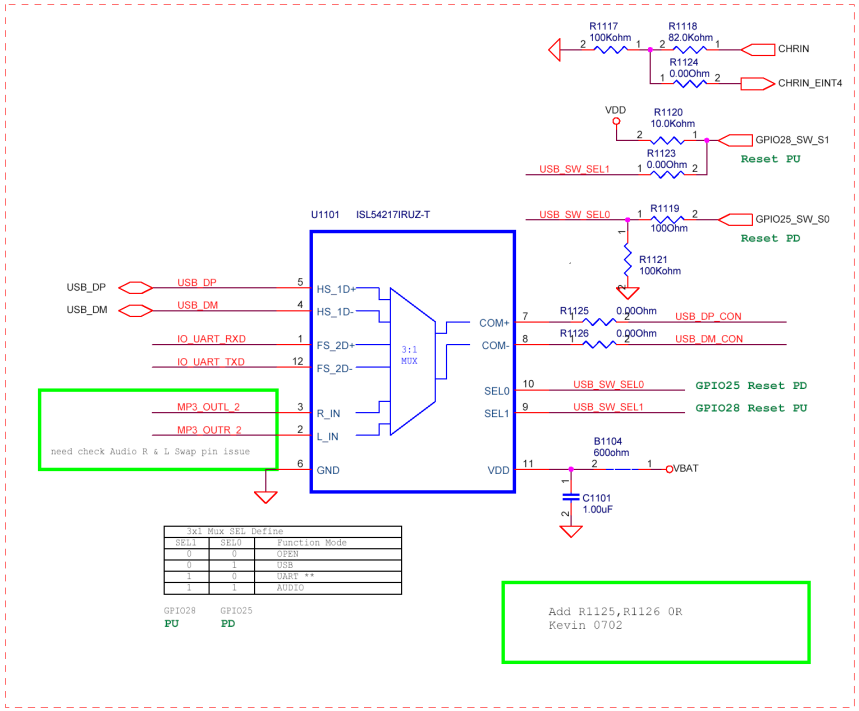


I/O INTERFACE

Change FL1102 MCM1220B900G to MCM1012B900F
Kevin 0707

Micro USB





3x1 Mux SEL Define		
SEL1	SEL0	Function Mode
0	0	OPEN
0	1	USB
1	0	UART **
1	1	AUDIO

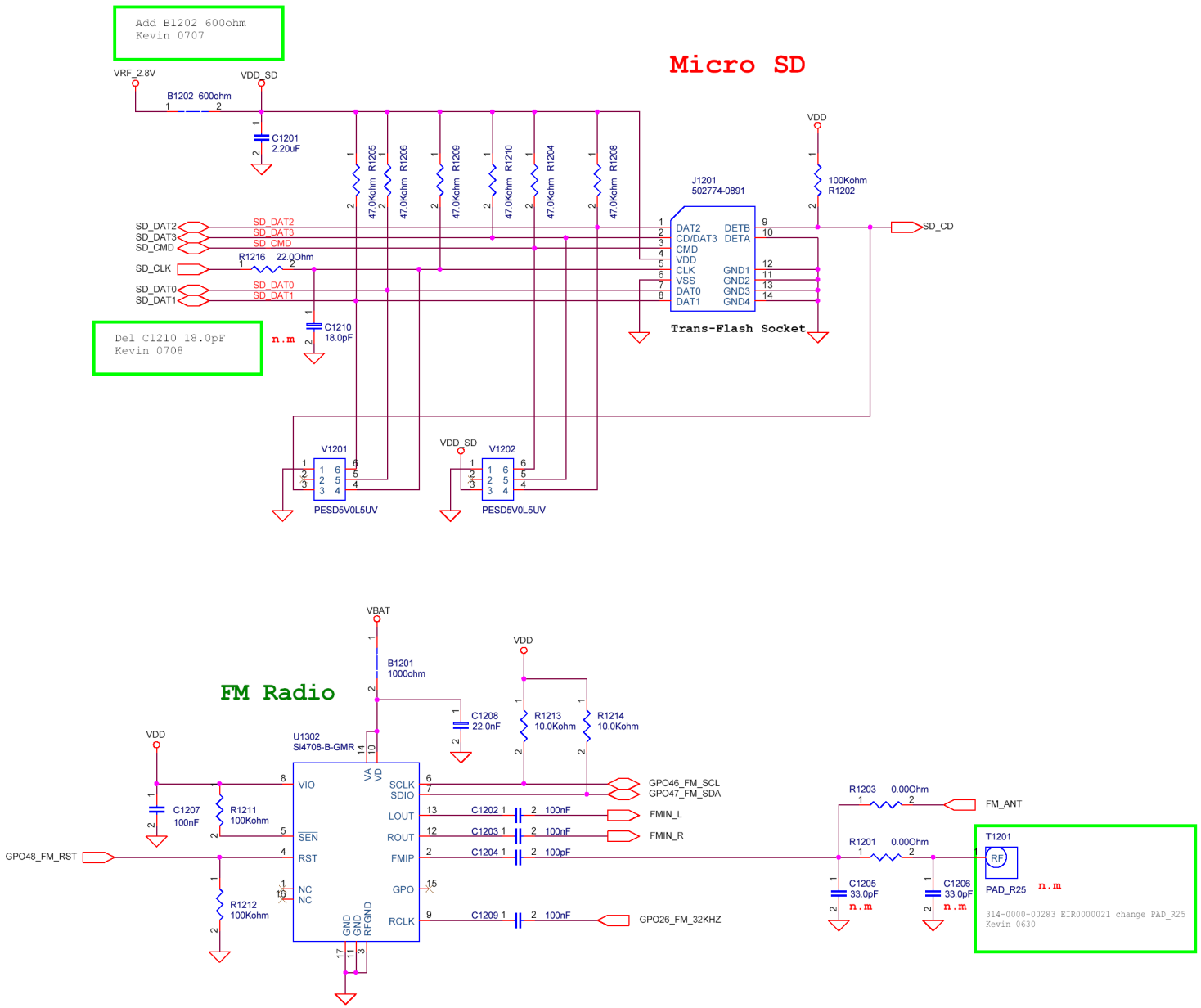
GPIO28 PU GPIO25 PD

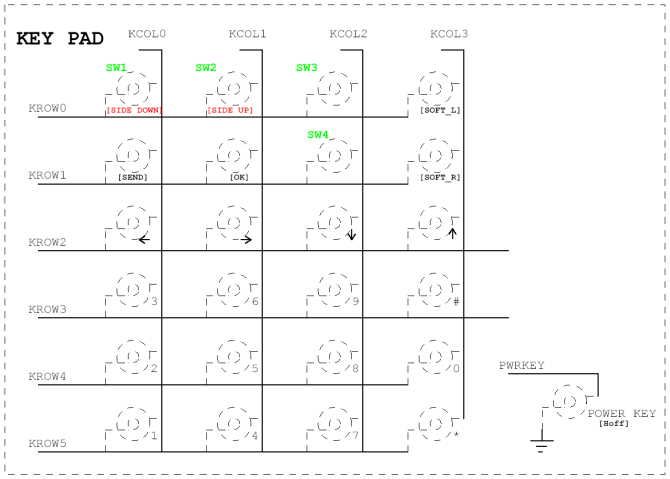
Accessory PIN Define				
PIN	Charger	USB	UART	Hands-free
1 V_USB	+5V	+5V	X	X
2 D-	D-	D-	TXD	AUDIO_R
3 D+	D+	D+	RXD	AUDIO_L
4 ID	X	X	X	MIC/Hook
5 GND	GND	GND	GND	GND

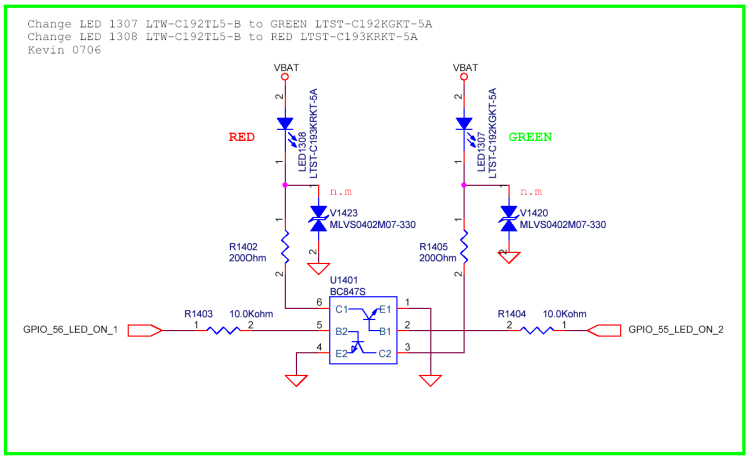
Arima Communications Corp.

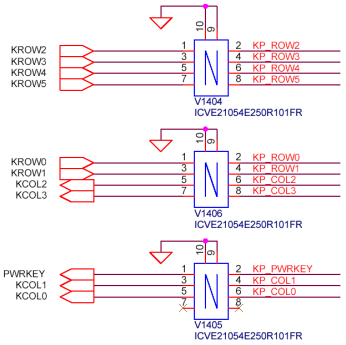
Title: O13

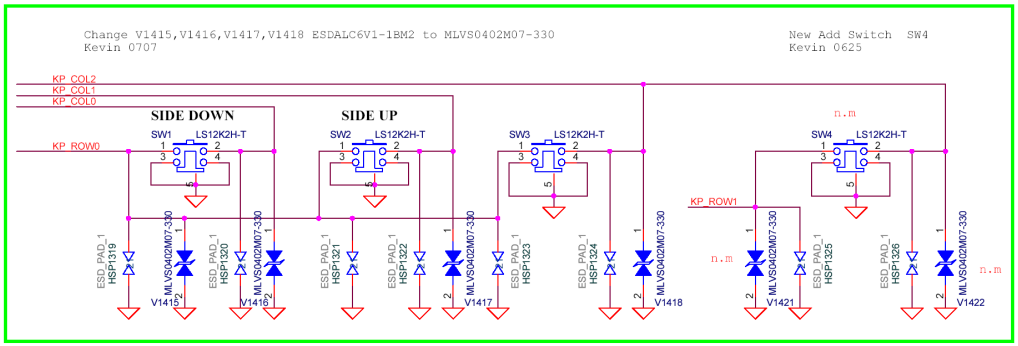
Size: A3 | Document Number: Accessory IO | Rev: 01

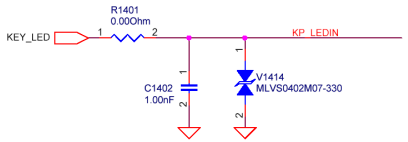

Add B1202 600ohm
Kevin 0707
Micro SD
VRF_2.8V
VDD_SD
B1202 600ohm
C1201
2.20uF
R1205
R1206
R1209
R1210
R1204
R1208
47.0Kohm
J1201
502774-0891
VDD
100Kohm
R1202
SD_DAT2
SD_DAT3
SD_CMD
SD_CLK
SD_DAT0
SD_DAT1
R1216 22.0Ohm
DAT2
CD/DAT3
CMD
VDD
CLK
VSS
DAT0
DAT1
DETB
DETA
GND1
GND2
GND3
GND4
SD_CD
Trans-Flash Socket
Del C1210 18.0pF
Kevin 0708
n.m
C1210
18.0pF
V1201
V1202
PESD5V0L5UV
FM Radio
VBAT
B1201
1000ohm
C1208
22.0nF
R1213
10.0Kohm
R1214
10.0Kohm
U1302
Si4708-B-GMR
C1207
100nF
R1211
100Kohm
R1212
100Kohm
GPO48_FM_RST
VIO
SEN
RST
NC
NC
SCLK
SDIO
LOUT
ROUT
FMIP
GPO
RCLK
GND
GND
RFGND
GPO46_FM_SCL
GPO47_FM_SDA
C1202 100nF
C1203 100nF
C1204 100pF
C1209 100nF
FMIN_L
FMIN_R
GPO26_FM_32KHZ
R1203 0.00Ohm
FM_ANT
R1201 0.00Ohm
C1205
33.0pF
n.m
C1206
33.0pF
n.m
T1201
RF
PAD_R25
n.m
314-0000-00283 EIR0000021 change PAD_R25
Kevin 0630
Need Check 32HKz IO Level 1.8v issue



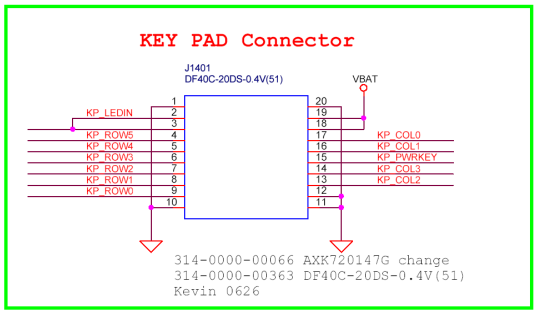








Change V1414 ESDALC6V1-1BM2 to MLVS0402M07-330
Kevin 0707

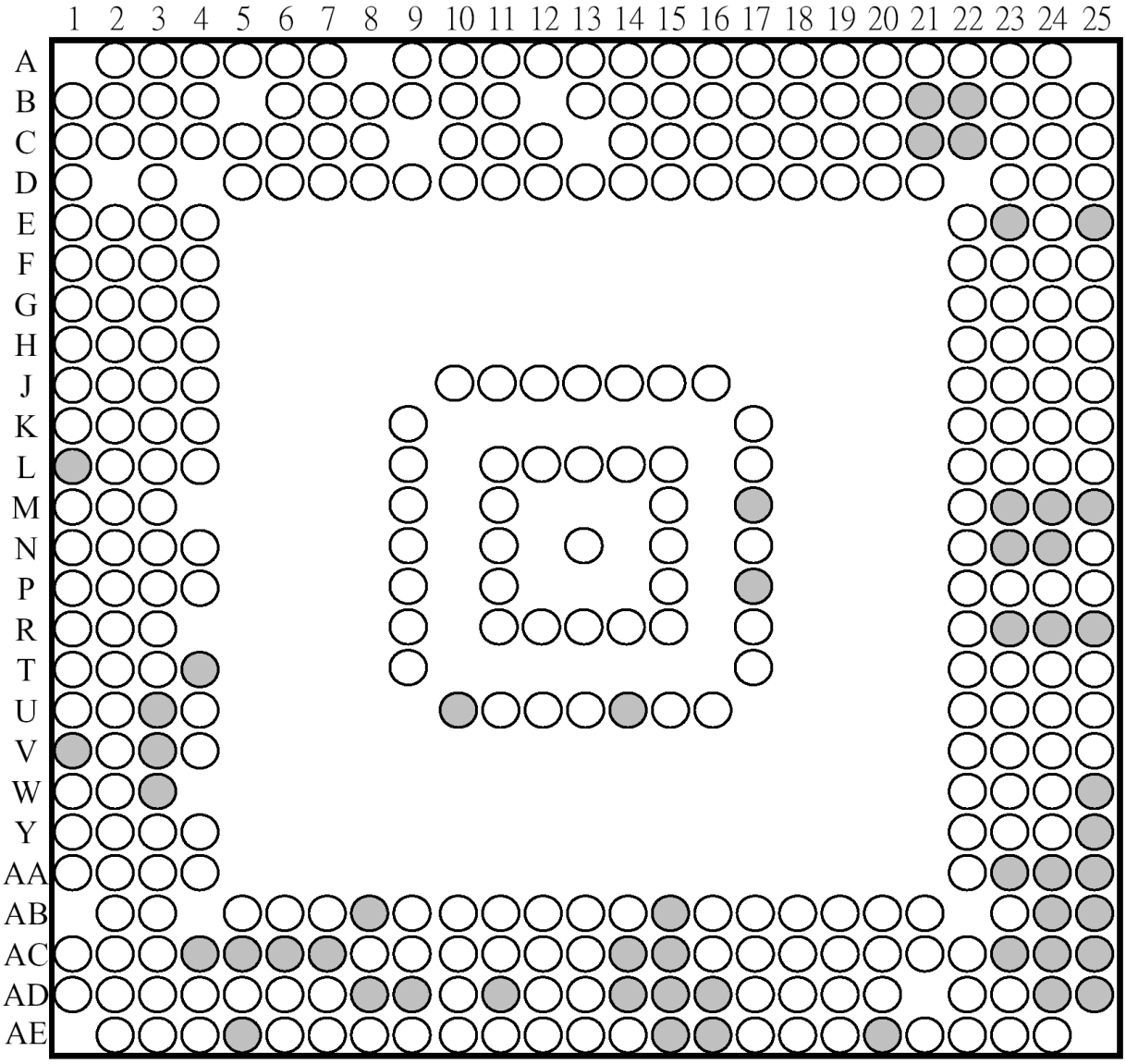


Arima Communications Corp.		
Title: O13		
Size: A3	Document Number: KEYPAD	
Date: Wednesday, July 08, 2009	Sheet 13 of	

8. BGA IC PIN Check

8.1 BGA PIN Check of main chip (MT6235)

BB_MT6235 (U401)

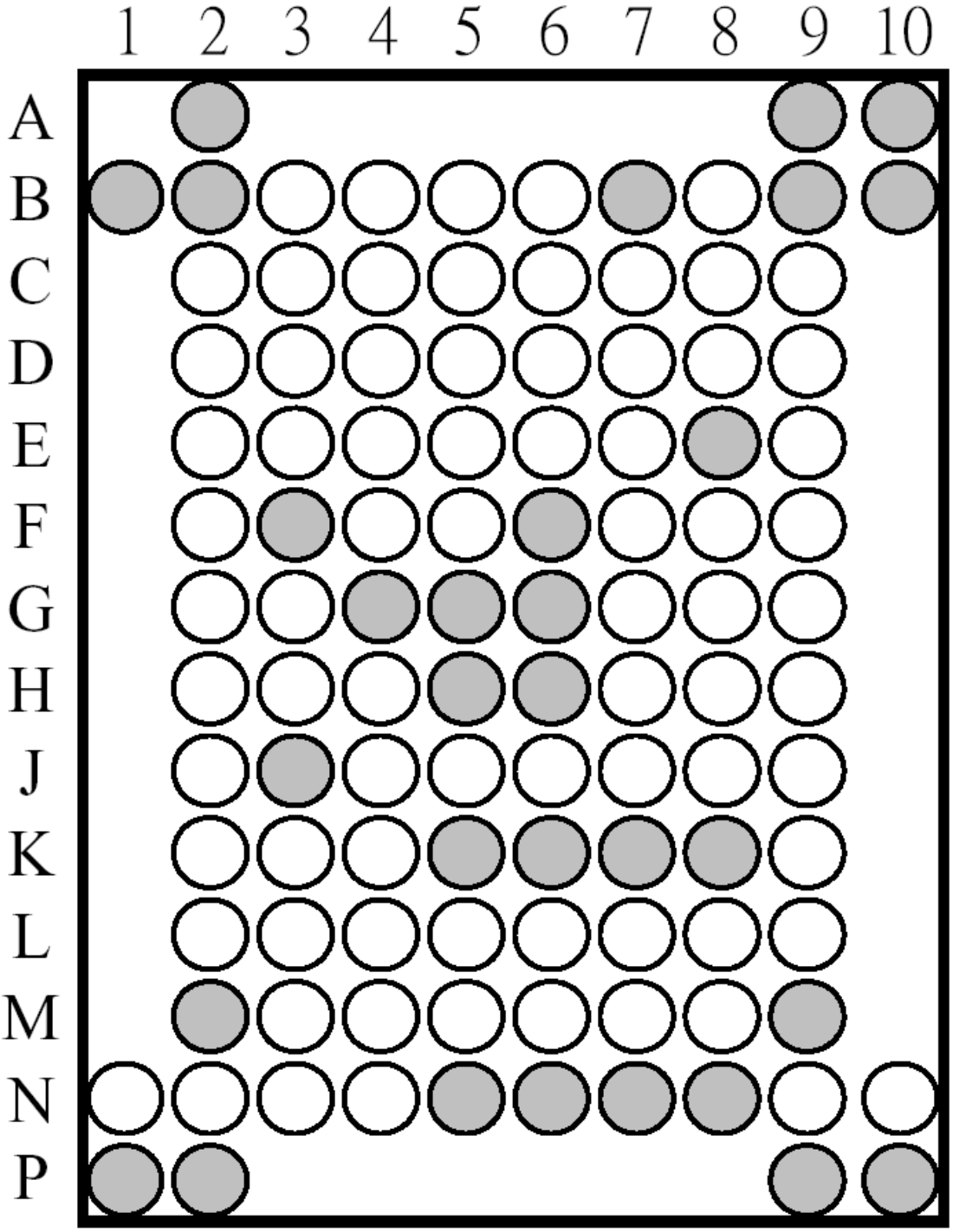


BGA use

BGA non-use

8.2 BGA PIN Check of Memory (K5D12571CA-D090)

K5D12571CA-D090 (U601)

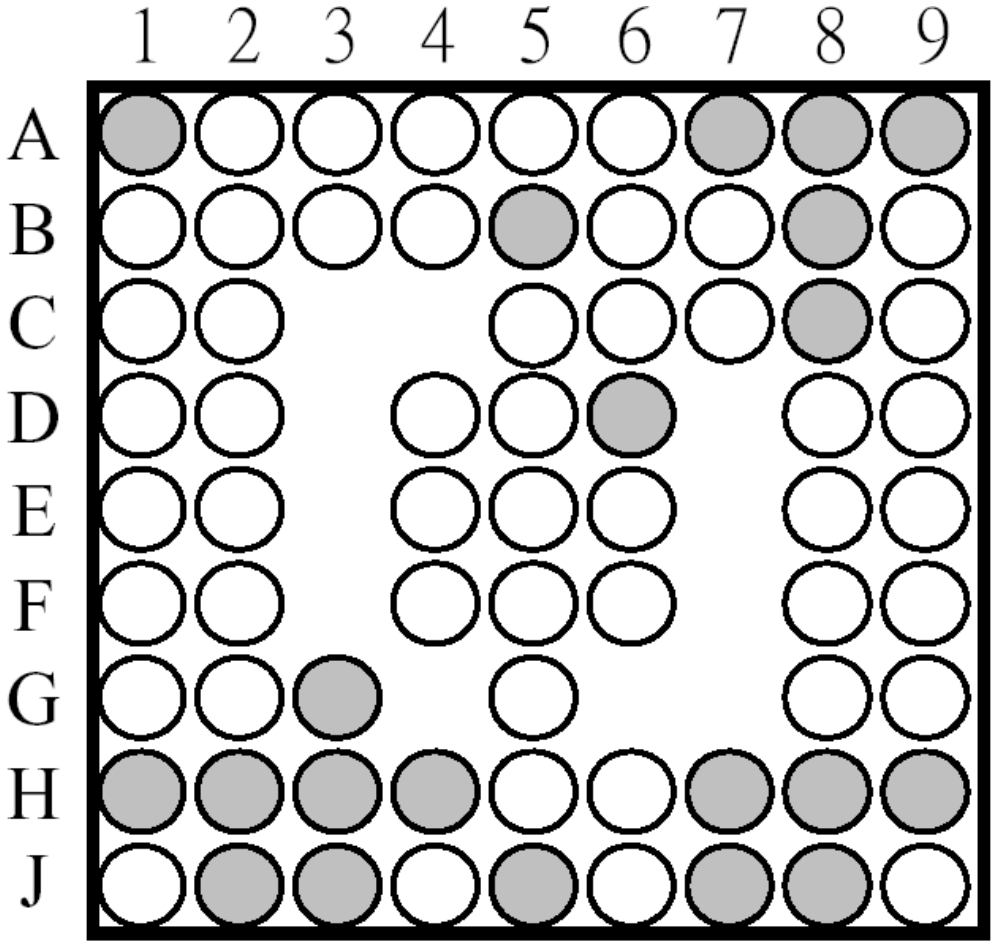


BGA use

BGA non-use

8.3 BGA PIN Check of Bluetooth (MT6601)

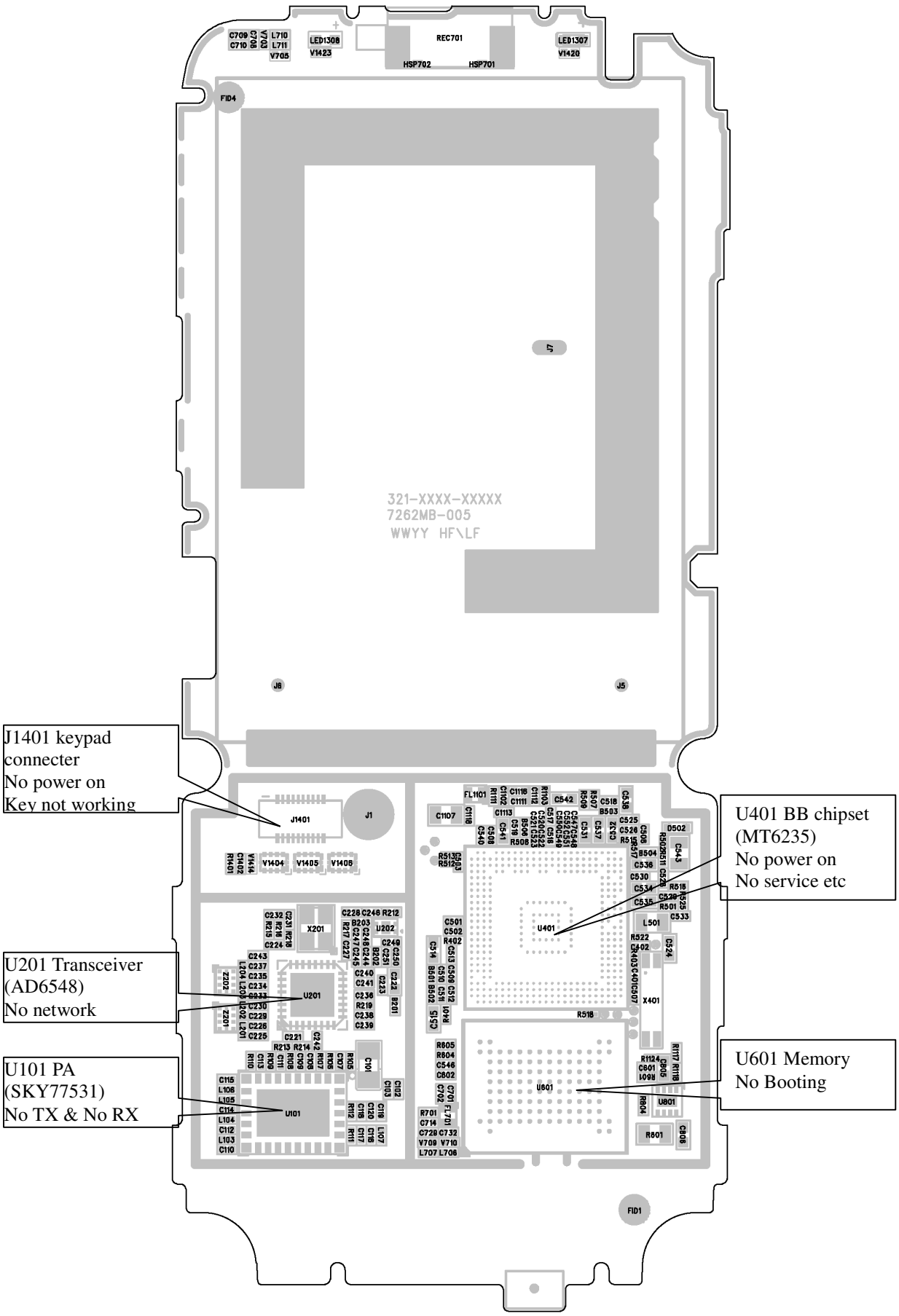
MT6601 (U301)

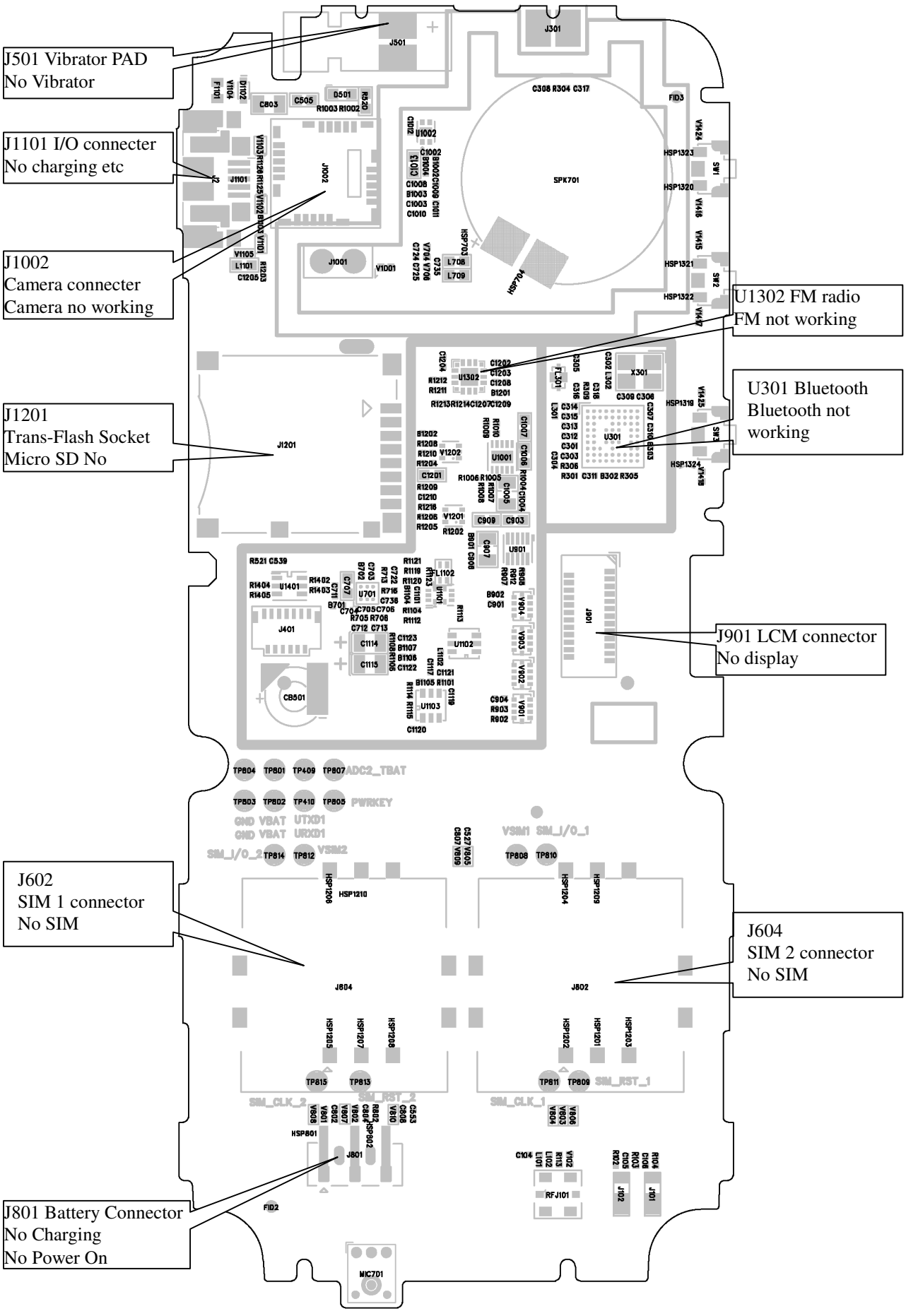


BGA use

BGA non-use

9. PCB LAYOUT


J1401 keypad connecter
No power on
Key not working
U201 Transceiver
(AD6548)
No network
U101 PA
(SKY77531)
No TX & No RX
U401 BB chipset
(MT6235)
No power on
No service etc
U601 Memory
No Booting
TOP


J501 Vibrator PAD
No Vibrator
J1101 I/O connecter
No charging etc
J1002
Camera connecter
Camera no working
J1201
Trans-Flash Socket
Micro SD No
U1302 FM radio
FM not working
U301 Bluetooth
Bluetooth not
working
J901 LCM connector
No display
J602
SIM 1 connector
No SIM
J604
SIM 2 connector
No SIM
J801 Battery Connector
No Charging
No Power On

Bottom

10.Engineering Mode

1.1. Enter and Exit Engineering Mode

In idle screen, enter the Factory Mode menu by typing “*2945#*#”. Like normal menu operations, press Left-Soft-Key (LSK) “Back” to the previous screen or End key to go back to the idle screen.

1.2. Version

Version info summary: Software version number, software codebase branch, build time info.
MCU SW: Software version number
Melody: melody version
Serial No. :Serial number.
BB chip: Base band chip info.

1.3. Network Setting

1.3.1. Network Info

This function is for engineers to monitor the status of the protocol stack and interactions with the network. Use LSK ok to toggle the value of a selected item. After selection of items to monitor is complete,press RSK Back. If any settings are changed,a screen appears with “Update Parameter?”. Pressing LSK Yes saves the new values to the protocol stack;Pressing RSK NO discards all changes.These settings are not stored in NVRAM;thus the settings are lost if the handset is powered off.

Item	Function Selection	Value	Description
Network Info.	RR Cell Sel	On/Off	Radio Resource cell selection information
	RR Ch Dscr	On/Off	Radio Resource channel description information
	RR Ctrl Chan	On/Off	Radio Resource control channel information
	RR RACH Ctrl	On/Off	Radio RACH control channel information
	RR LAI Info	On/Off	Radio Resource LAI information
	RR Radio Link	On/Off	Radio Resource radio link information
	RR Meas Rep	On/Off	Radio Resource measurement report information
	CC Chan Info	On/Off	Call Control Channel information
	CC Call Info	On/Off	Call Control Call information
	CA List Info	On/Off	CA List information
	PLMN Info	On/Off	PLMN information
	GPRS Info	On/Off	GPRS information
	Si2Q/Mi Info	On/Off	Si2Q/Mi information
	TBF Status	On/Off	TBF Status
	Block Info	On/Off	Block information

1.3.2. Band Selelct

Item	Function Selection	Value
Band	900 MHz	ON/OFF
	1800 MHz	ON/OFF
	1900 MHz	ON/OFF
	900/1800 MHz	ON/OFF
	Auto	ON/OFF

1.3.3. Cell Lock

1.3.4. Network Events

To set the filter of Network Events (RR,SMU,TCM,RMC,PHB,PHB).

1.4. Device

1.4.1. LCD

Item	Function Selection	Value	Description
Version	Set Contrast	0-255	To set the Cntrast of Main LCD.
	Set Bias Ratio	0-255	To set the Bias Ratio of Main LCD.
	Set Line rate	0-255	To set the Line Rate of Main LCD.
	Set Temperature	0-255	To set the Temperture of Main LCD.
	Set Color		To set the value of RGB.
	Diplay Demo Pic.		To display the picture.

The string to enter Engineering Mode can be changed in the source code.
The larger the value set in the input box ,the brighter the screen is.

1.4.2. GPIO

The GPIO includes **List GPIO**,**GPIO Editor** and **GPO Editor**.

Item	Function Selection	Value	Description
List GPO/GPIO	GPIO#5	On/Off	To switch GPIO#5 On or Off
	GPIO#13	On/Off	To switch GPIO#13 On or Off
	GPIO#14	On/Off	To switch GPIO#14 On or Off
	GPIO#15	On/Off	To switch GPIO#15 On or Off
GPIO Editor	View/Edit the state of the GPIO entered		Enter the GPIO to view and edit the state: Current Level:High/Low Mode:[0~3] Direction:IN/OUT
GPO Editor	View/Edit the state of the GPO entered		Enter the GPO to view and edit the state: Current Level:High/Low Mode:[0~3] Direction:IN/OUT

List GPO/GPIO is for predefined functional GPIOs. The setting depends on the project specification.

GPIO Editor and **GPO Editor** are extensive functionalities,that allow engineers to change the state of any GPIO/GPO.

1.4.3. PWM

There are 3 PWMs.

Item	Function Selection	Value	Description
PWM	PWM1	Freq = 0-255, Duty = 0- 100	PWM Editor shows the following info: Level:[1~5] Frequency:[0~255] Duty:[0~100]
	PWM2	Freq = 0-255, Duty = 0-100	PWM Editor shows the following info: Level:[1~5] Frequency:[0~255] Duty:[0~100]
	PWM3	Freq = 0-255, Duty = 0-100	PWM Editor shows the following info: Level:[1~5] Frequency:[0~255] Duty:[0~100]

1. On entry of the PWM Editor,the setting of the current level is shown. Settings of all levels can be adjusted, stored(if the ok key is pressed) and applied.

1.4.4. EINT

Display External Interrupt Status. 1 means ON, 0 means OFF.

Item	Function Selection	Value	Description
EINT	EINT0_ACC_DET 0	0/1	Plug in the Charger to test.
	BT_EINT3	0/1	Power the Bluetooth to test
	BATTERY TEMP	0/1	Battery Test.

1.4.5. ADC

Display the ADC value. The ADC value is displayed and updated every 1 second on this screen.

Item	Function Selection	Value	Description
ADC	VBAT	XX.XX(V)	Battery voltage
	Current	XX.XX(A)	Charging current
	NC	XX.XX(C)	Battery Temperature
	NC	XX.XX(V)	Headset send key
	VChgr	XX.XX(V)	Charger voltage

1.4.6. Set Default Level

Item	Function Selection	Value	Description
Main LCD Contrast	LEVEL1-15	0-255	To set the contrast of 15 levels of Main LCD.
Battery	LEVEL 1	0-9999999	Voltage below LEVEL 1 powers off automatically.
	LEVEL 2	0-9999999	Voltage below LEVEL 2 prohibits MO calls.
	LEVEL 3	0-9999999	Voltage below LEVEL 3 pops up a warning screen.
	LEVEL 4	0-9999999	Voltage below LEVEL 4 displays battery status icon with 0 level(empty).
	LEVEL 5	0-9999999	Voltage below LEVEL 5 displays battery status icon with 1 level.
	LEVEL 6	0-9999999	Voltage below LEVEL 5 displays battery status icon with 2 level.
	LEVEL 7	0-9999999	Voltage above LEVEL 6 displays battery status icon with 3 level(full).
	LEVEL 8-10	9999999	Reserved,should be 9999999.
PWM 1	Freq 1-5	0-255	Frequency of PWM for 5 levels.
	Duty 1-5	0-100	Duty Cycle of PWM for 5 levels.
PWM 2	Freq 1-5	0-255	Frequency of PWM for 5 levels.
	Duty 1-5	0-100	Duty Cycle of PWM for 5 levels.
PWM 3	Freq 1-5	0-255	Frequency of PWM for 5 levels.
	Duty 1-5	0-100	Duty Cycle of PWM for 5 levels.

1. All settings are saved in NVRAM when the user presses LSK ok on the confirmation screen “Update Parameters?”

1.4.7. Set UART

Change the UART setting for AT Command. If AT Command is set to UART1,then TST^2 is set to UART2. If AT Command is set to UART2, then TST is set to UART1.

The UART POWER ON/OFF is for selection of UART1/2/3 on or off.

1.4.8. Sleep Mode

Enable or disable sleep mode.

1.4.9. DCM Mode

Enable or disable sleep mode.

1.4.10.PMIC 6318

To test the chip of PMIC 6318.

1.4.11.FM Radio

Item	Function Selection	Value	Description
FM Radio	MONO	Disable/Enable	To Power on/off MONO
	STEREO	Disable/Enable	To Power on/off STEREO
	RSSI	Level1~6	To set the signal level
	If Count Delta	10,15,20,25,30 KHz	To set the frequency increment value
	RSSI Info.		To display the signal information

1.4.12.RTC XOSC(WO)

To set RTC frequency.

1.5. Audio

1.5.1. Normal Mode, LoudSp Mode, Headset Mode

Five types of audio settings can be set.

Item	Function Selection	Value	Description
FIR		0-5	Set the 6 levels for FIR
Speech	0-6	0-255	Set the 7 volume levels for Speech
Key tone	0-6	0-255	Set the 7 volume levels for Key tone
Melody	0-6	0-255	Set the 7 volume levels for Melody
Sound	0-6	0-255	Set the 7 volume levels for Sound
Microphone	0-6	0-255	Set the 7 volume levels for Microophone
Side tone	Only one level	0-255	Set the gain of the Side tone

1. The preset value is read from NVRAM when entering Normal Mode.
2. To change the volume,use the up and down keys.use LSK set to set the value(not yet stored to NVRM).
3. On exiting Normal Mode, a confirmation screen “Update Parameter?”appears. Pressing LSK yes stores the setting to NVRAM.Pressing RSK no discards all changes and returns the user to the Audio screen.
4. Only the active volume level gain of the active mode is set to the hardware

register.For example: If the MS is in Normal Mode and the current speech volume level is LEVEL4,updating the parameter sets the gain value of LEVEL4 of Speech to the hardware register.

5. To change the current volume level of Speech ,use side key when in call.
6. To change the current volume level of Key tone,use side key when in idle screen.
7. To change the current level of Ring tone,enter User Profiles->[Active Mode]->Customize->Volume->Ring tone to change volume.
8. The parameters of Headset Mode are applied only when the headset is plugged in.
9. The parameters of LoudSp Mode are applied only when handsfree is turned on during a call.

1.5.2. Ring Tone

This audio setting is used to demonstrate all melodies on the MS,including iMelodies,Midis and Sounds(MIDI format). Use the up and down keys to scroll over the ring tones: highlighting a selection longer than one second plays the ring tone.

1.5.3. Speech Enhancement

You can set the Common Parameters 0~7.
There are 8 Mode for selection :Normal Mode,Headset Mode,LoudSp Mode,BT Earphone Mode,BT Cordless Mode,AUX1 Mode,AUX2 Mode,AUX3 Mode. The 8 Mode have 0~15 parameter to set.

1.5.4. Max Swing

This setting sets the maximum swing value.

1.5.5. Debug Info

The setting sets the Debug information parameter :0~15.

1.5.6. Auto Record Setting

The Setting includes: VM Support, Auto Speech Record.
You can turn on/off them.

1.6. GPRS Activation

This menu is for GPRS mode test only (if supported).

1.6.1. Attach

To start GPRS attach.

1.6.2. Activate PDP

To activate GPRS PDP context1-15.

1.6.3. Deactivate PDP

To deactivate GPRS PDP context.

1.6.4. Send Data

To send data over GPRS connection.

1.6.5. PING

N/A.

1.7. Misc

This screen contains othe miscellaneous settings.

Item	Function Selection	Description	
Auto Answer	ON/OFF	To toggle on or off the Auto Answer function.	
High Speed SIM	ON/OFF	To toggle on or off the High Speed SIM test.	
PWR Duration		To show the power-on time,the current time and the duration.	
Backlight Mode	ON/OFF	To toggle on or off for Backlight functin.	
Detection Mode		To generate an ASSERT fail.In production release,the system Powers on silently in the exception of power-on mode.	
Assert Testing	ON/OFF for UART1,2,3	To enable or disable UART detection mode.	
RAM Test			
Memory Dump	ON/OFF	To switch between ON and OFF for Memory Dump information in the system service layer.	
MMI Debug	ON/OFF	To switch between ON and OFF for MMI debug level.	
AMR	ON/OFF	To enable or disable AMR.	
WAP	WAP related settings	**Sub-Item**	**Description**
		User Agent	To choose among listed user agents
		Accept Header	To choose among listed header types
		MMS Version	To choose among different versions for testing
J2ME TCK	J2ME TCK testing	To choose among the listed TCKs.	
Video High Bitrate	ON/OFF	To enable or disable Video High Bitrate.	
Cell Reselection		To profile Cell Reselection.	
JAVA Heap Size		To Select JAVA Heap Size.	
Software Tracer		To trace the software.	

1.8. Auto Test List

This helper function for Factory Mode Auto Test provides interfaces for the following:

1. To view the current auto test list;
2. To add a test to the list;
3. To remove a test from the list;
4. To change the priority of a test in the list, i.e. to adjust the order of test items in the list.

1.9. Debug Info

Item	Function Selection	Description
Last Exception	Read	To read and display information about the last exception.
System Stats	Write	To write stats.
Drive Letter	Read	To read and display information about Drive Letter.

1.10. Bluetooth

To test the Bluetooth Module.

Item	Function Selection	Value	Description
Bluetooth	General Test	Press OK to Start testing	To do the General Test
	Bluetooth RF Test	Press OK to Start testing	To test the Bluetooth RF
	Get Chip Version	Press OK	To get the Chip Version
	Bluetooth UPF Test	Press OK to Start testing	To test Bluetooth UPF

1.11. Profiling

Item	Function Selection	Value	Description
Profiiling	Memory Monitor	Press OK	To monitor control buffer(OSL) and APPMEN(ASM) , and after setting will display result at left screen .
	Momory Statistic	Press OK	Statistics of ASM to display Pool size and max of screen id and app id.

1.12. RF Test Tool

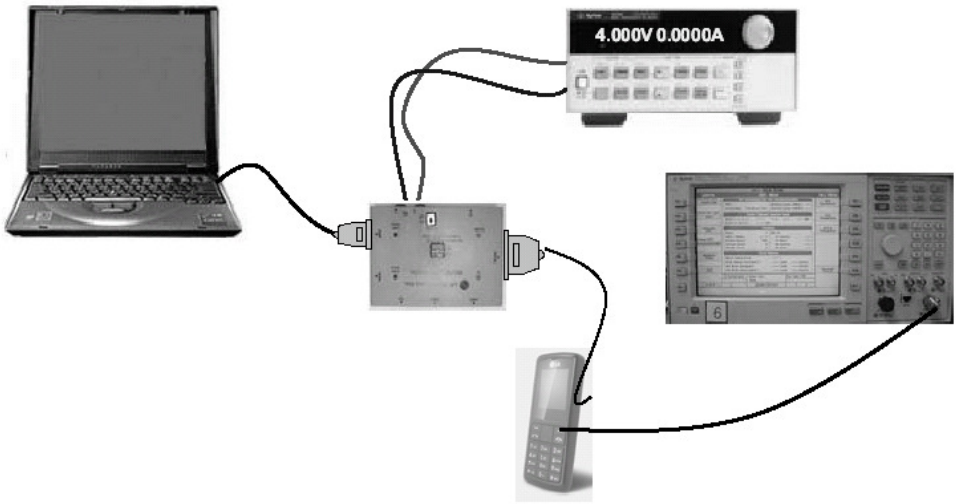
To test the RF. Press LSK OK and begin to test the RF.

1.13. Format NVRAM but keep K

To Erase Nvram Data but will keep calibration data and IMEI , BT Address , SN number .

11.CALIBRATION

11.1 Test Equipment set up



11.2 Calibration Steps

Environment Requirement:

OS:

MS Windows 2000 or XP

Hardware:

Generic Pentium III or above PC (256M RAM or above)

GPIB Card

- National Instruments GPIB device and driver
- Agilent GPIB card and driver
- KEITHLEY GPIB card and driver

Radio Communication Tester

- Rohde & Schwarz CMU 200
- Agilent 8960
- Anritsu MT8820
- Rohde & Schwarz CMD55
- Willtek WT4400
- Agilent N4010A (for Bluetooth test)
- Rohde & Schwarz CBT (for Bluetooth test)
- Anritsu MT88852 (for Bluetooth test)

DC Power Supply

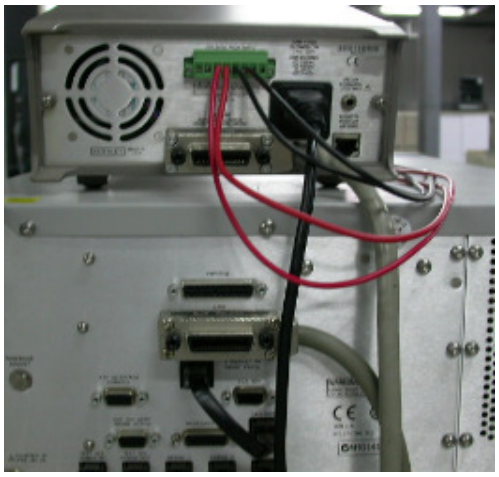
- Agilent 661x or Agilent 663x2 series power supply
- R&S NGSM Power Supply
- KEITHLEY 2303, 2304, 2306
- Agilent 3631A power supply
- Willtek WT4400 power supply option

Others

USB download cable
Dummy battery
RF cable

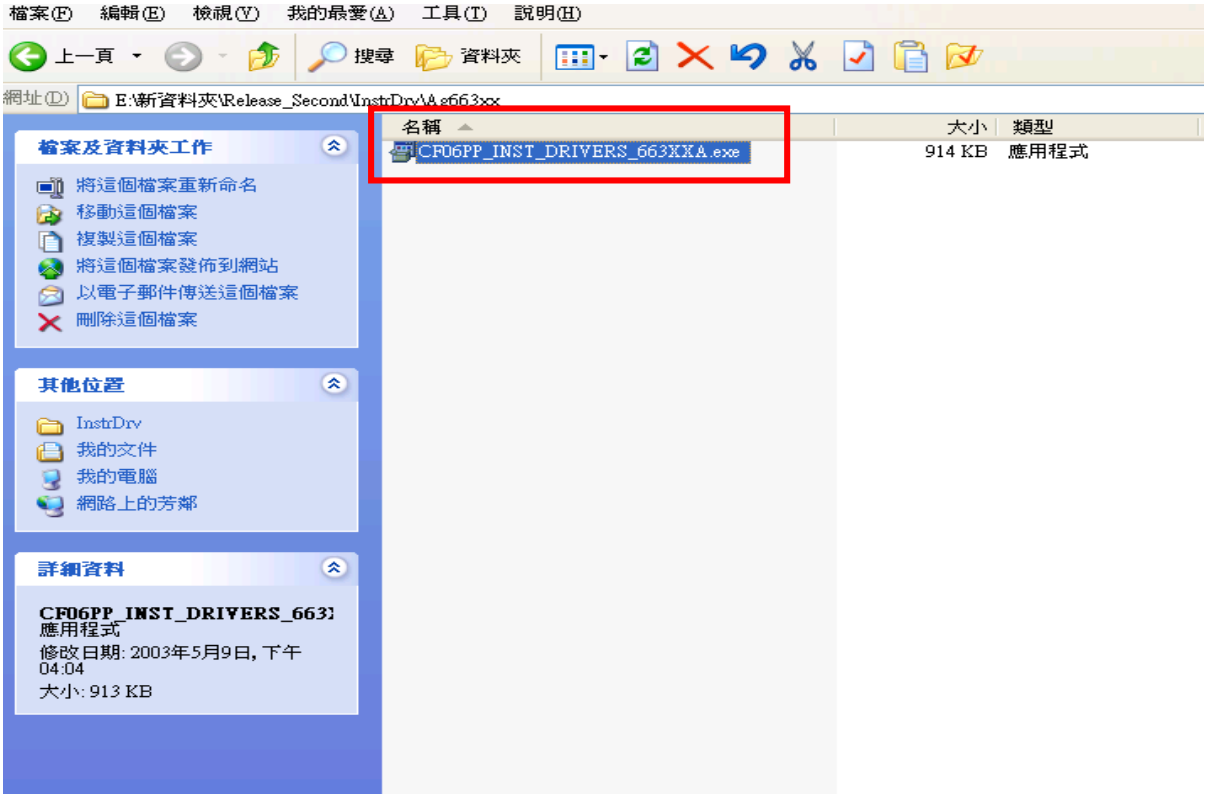
The following diagrams depict the system setups when using the Agilent test platform.

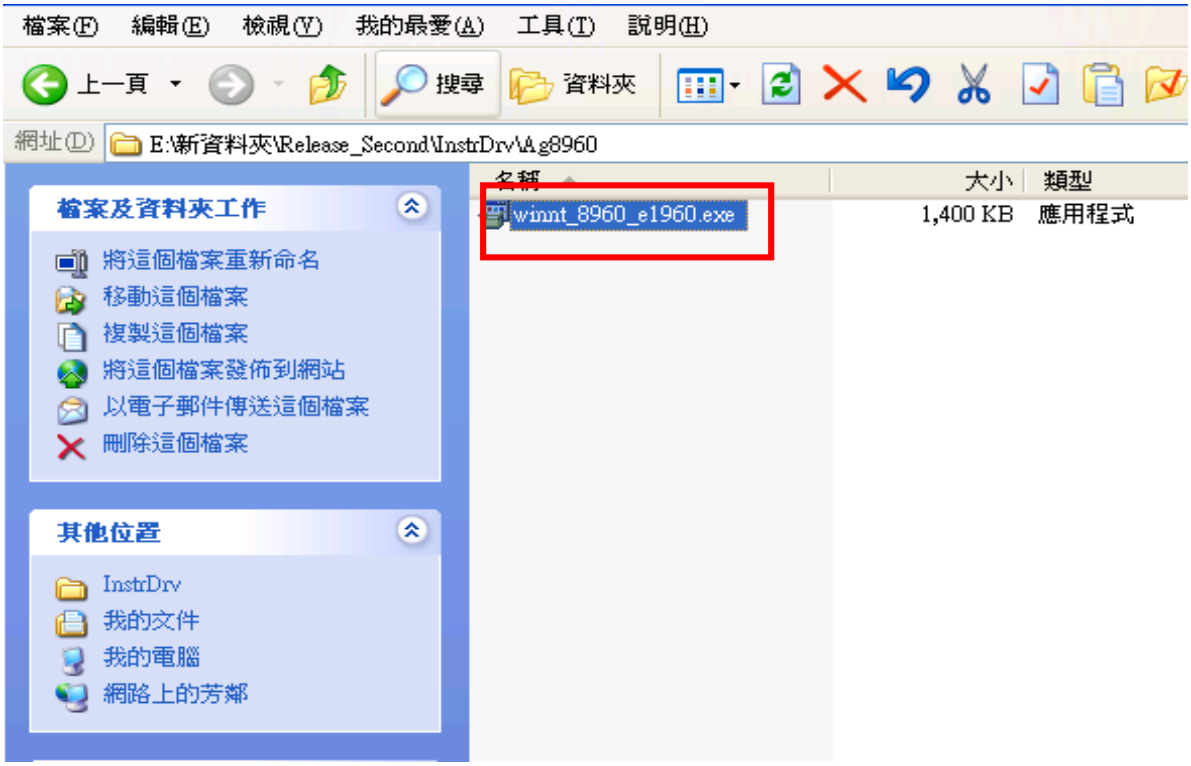
Connect 8960, power supply , computer ,phone

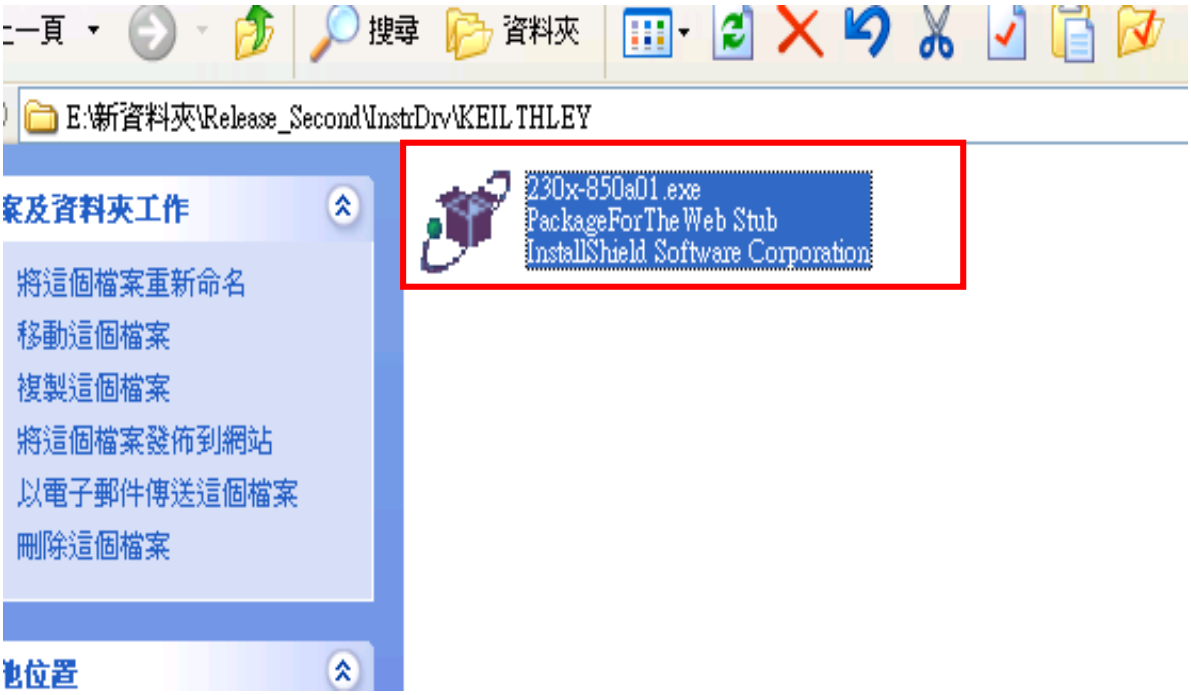


When install the MTK ATE tool, first install driver.

In turn execute CF06PP_INST_DRIVERS_663XXA.exe, winnt_8960_e1960.exe, 230x-850a01.exe.

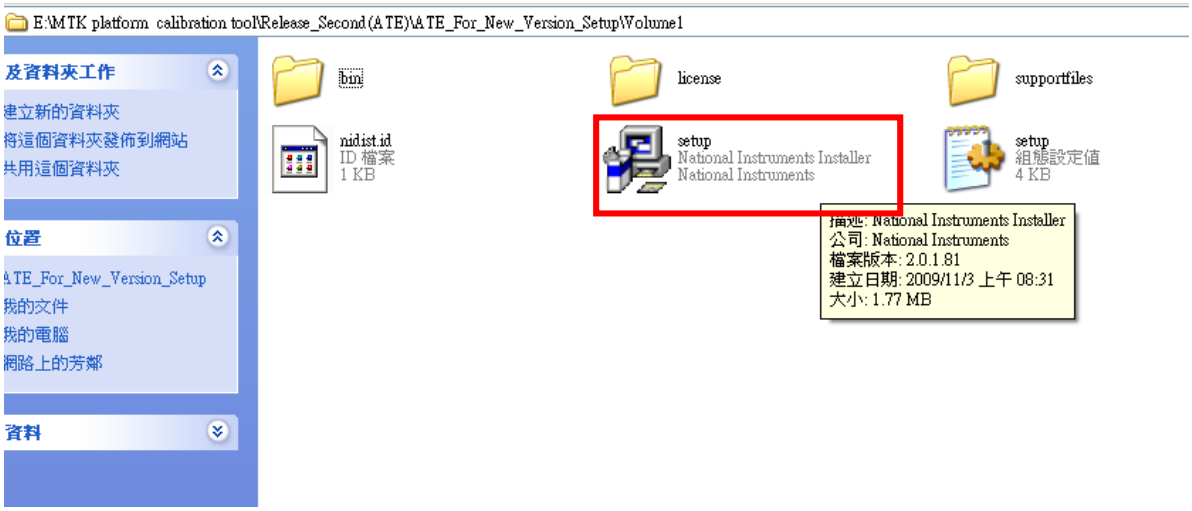




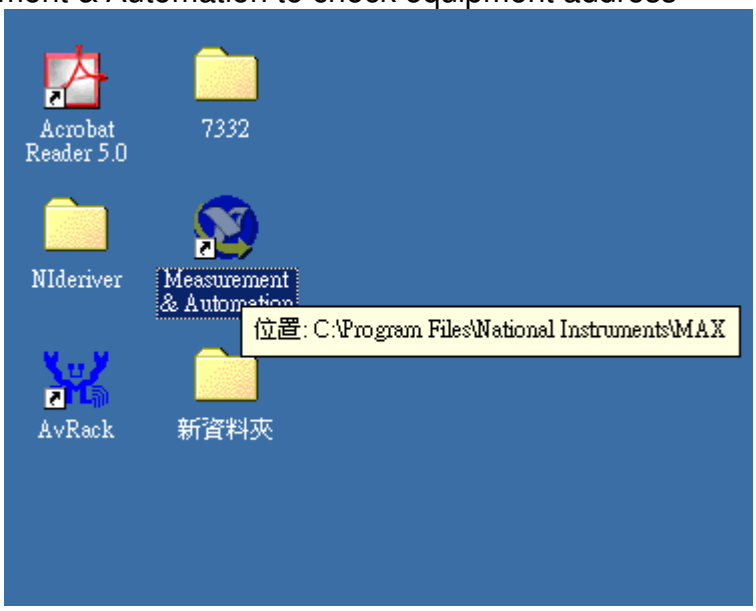

一頁
搜尋
資料夾
E:\新資料夾\Release_Second\InstrDrv\KEILTHLEY
案及資料夾工作
將這個檔案重新命名
移動這個檔案
複製這個檔案
將這個檔案發佈到網站
以電子郵件傳送這個檔案
刪除這個檔案
地位置
230x-850a01.exe
PackageForTheWeb Stub
InstallShield Software Corporation

Second， to install the MTK ATE tool, execute the KG195 \ Volume1 \setup.exe file. The Installation Wizard guides the user through the installation process step by step, up to Installation finish.

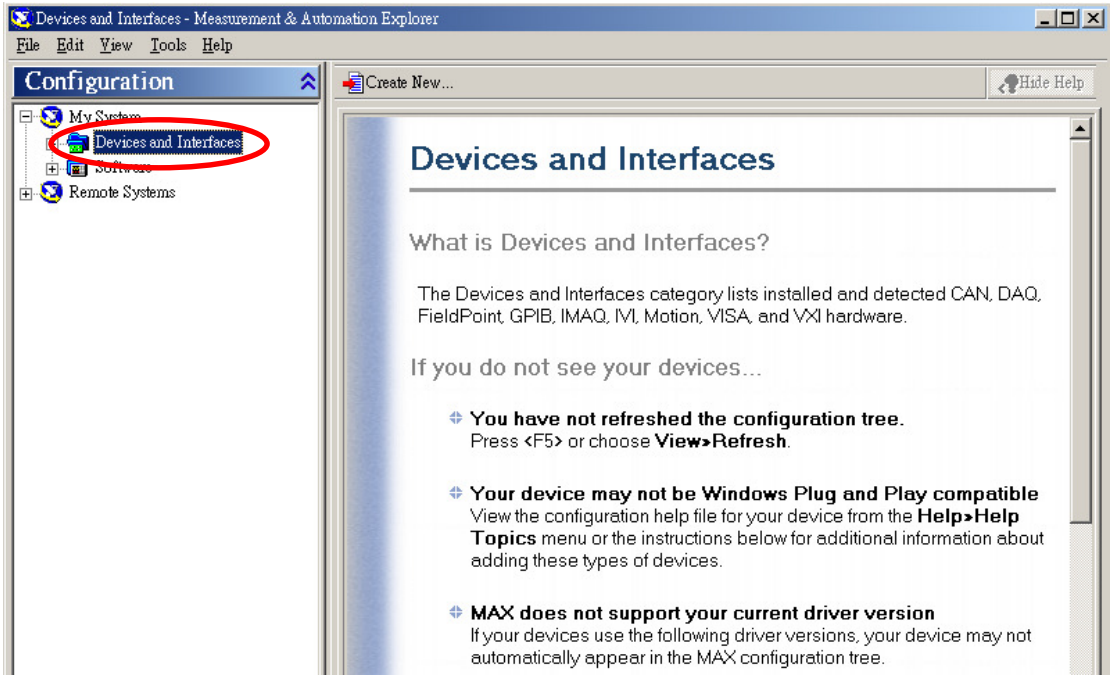
Third， to install the MTK ATE tool, execute the ATE_For_New_Version_Setup \ Volume1 \setup.exe file. The Installation Wizard guides the user through the installation process step by step, up to Installation finish.



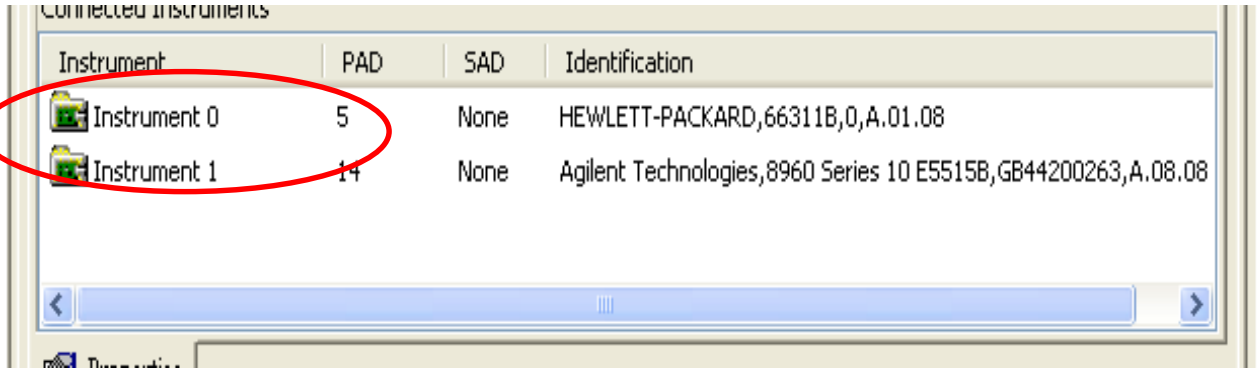
Execute Measurement & Automation to check equipment address



Choose Devices and Interfaces

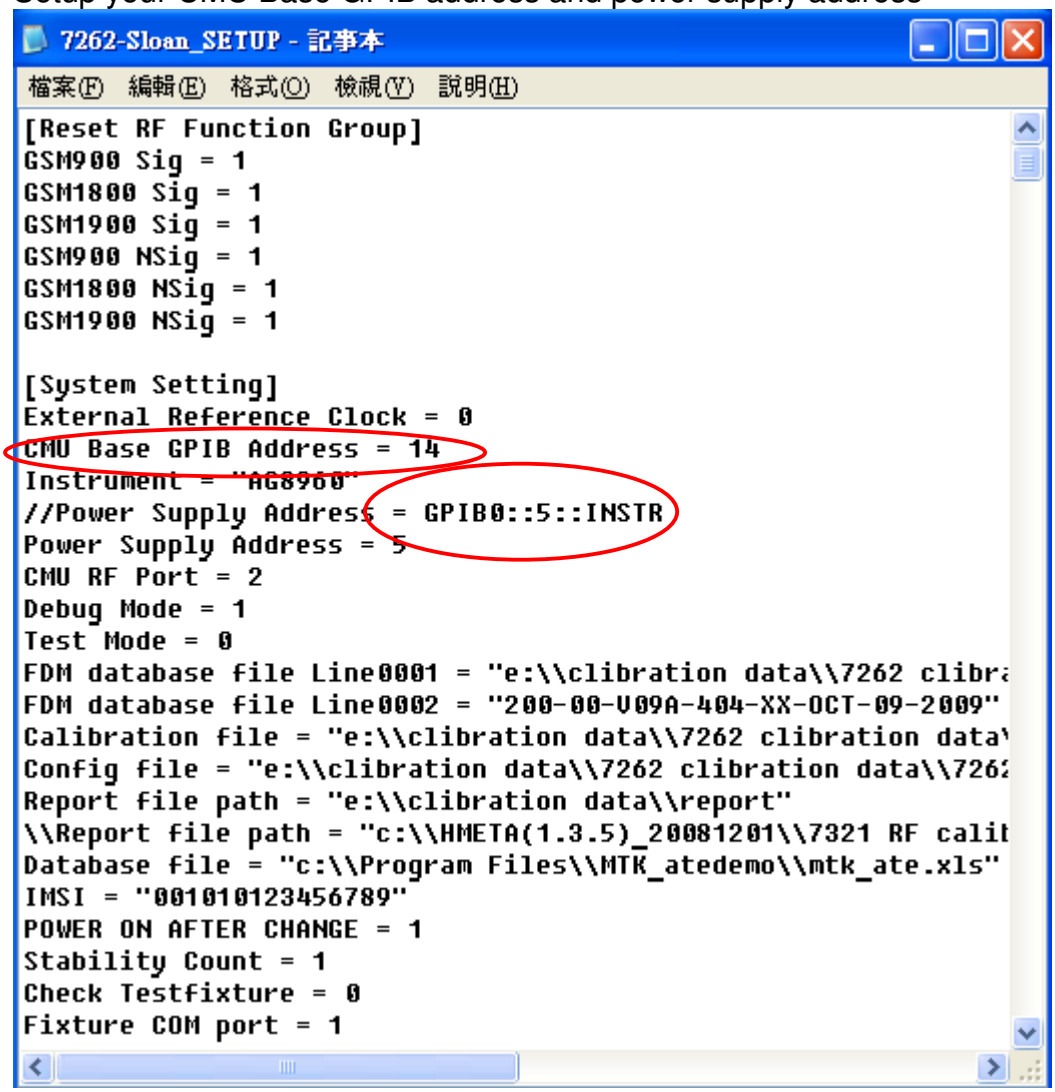


You can see your equipment address



Choose 7262-Sloan_SETUP.ini and open the file to setup from data files .
（For example: GX200）

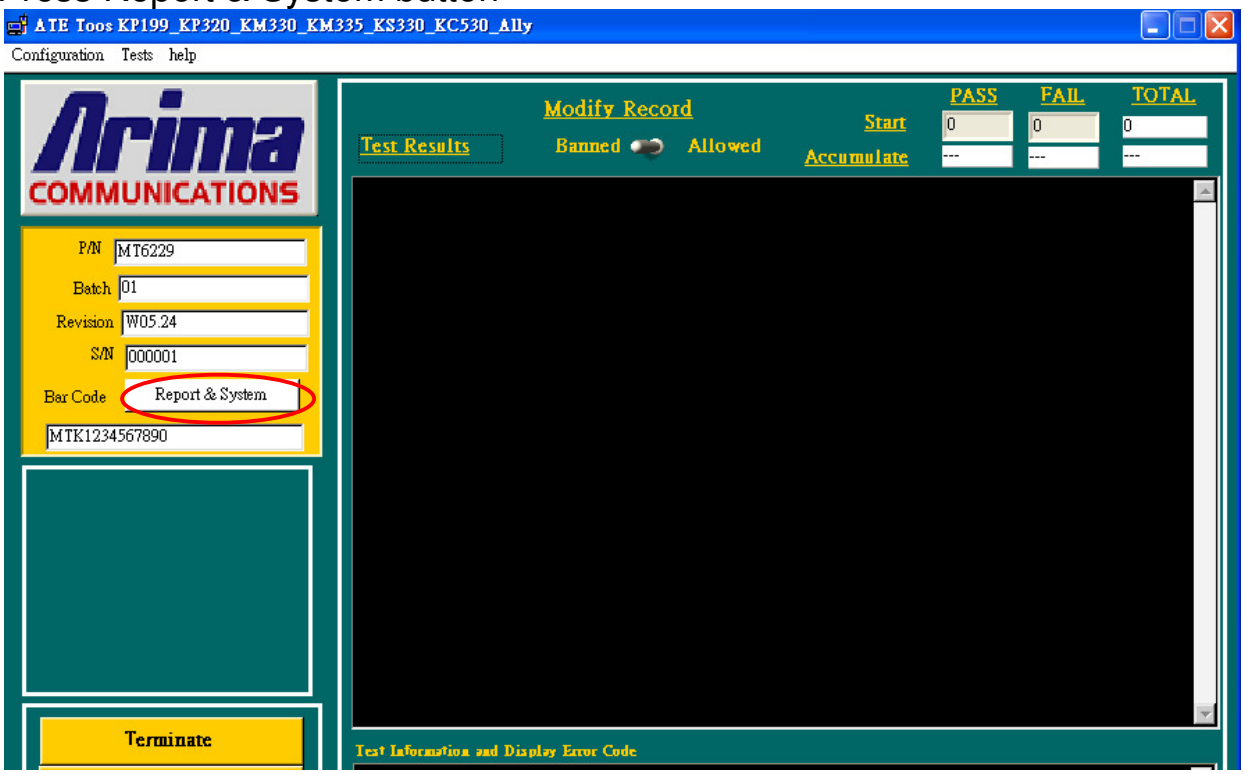
Setup your CMU Base GPIB address and power supply address



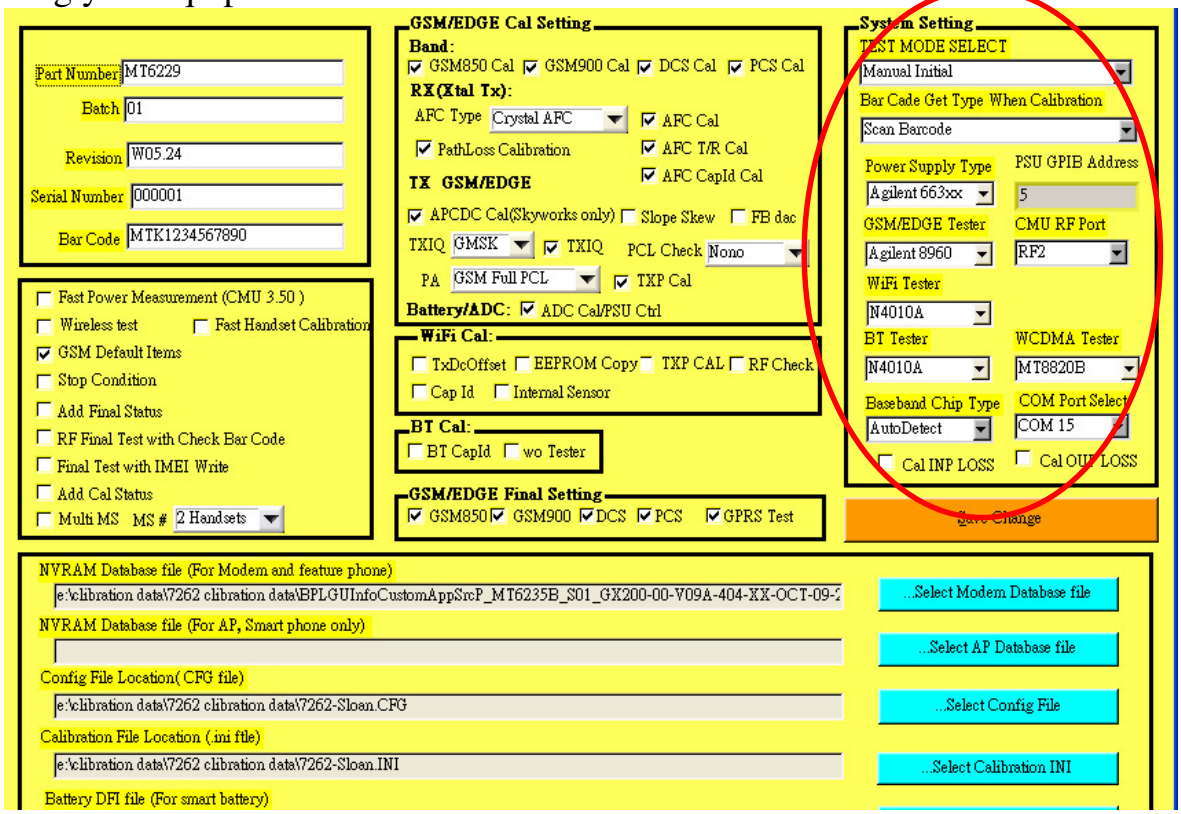
ATE Tool system setting

Execute MTK _ ate demo

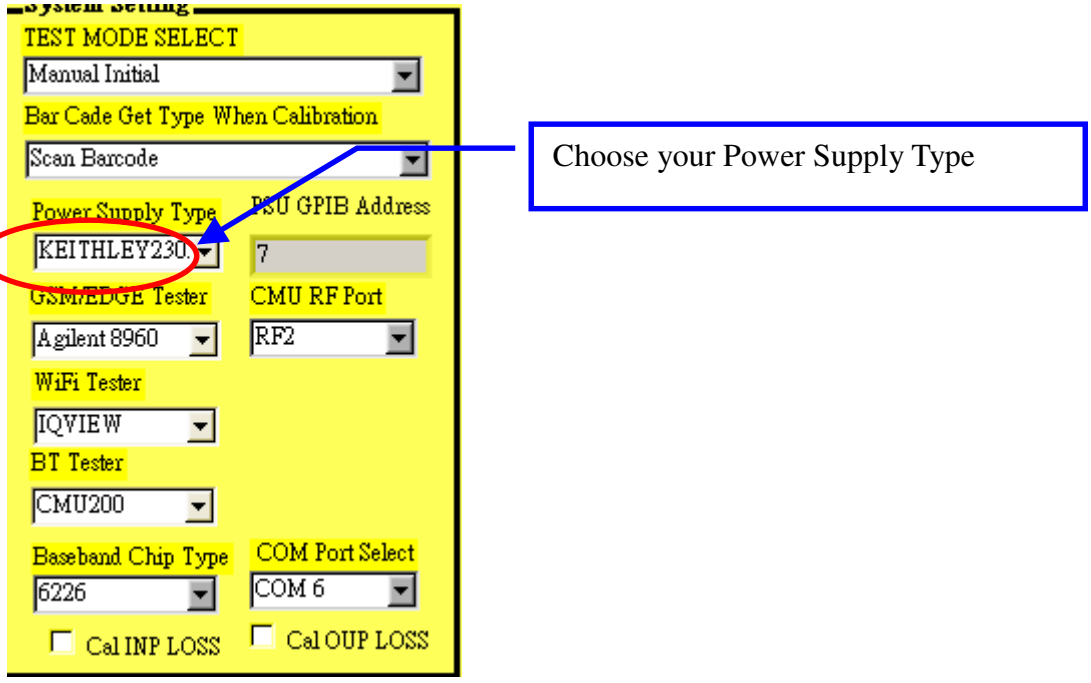
Press Report & System button



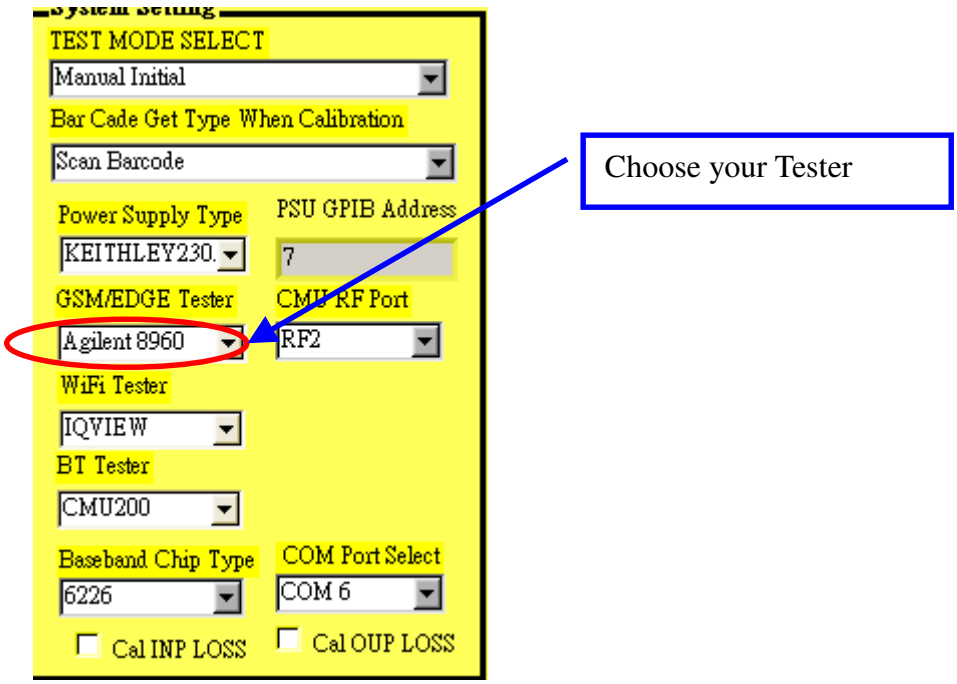
Setting your equipment



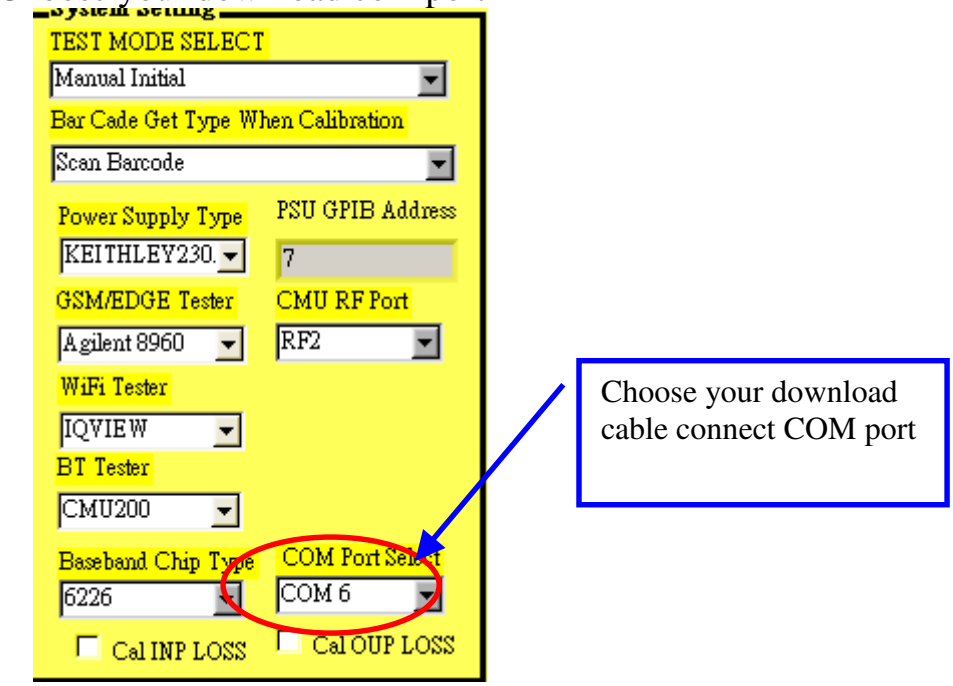
Setting your power supply type



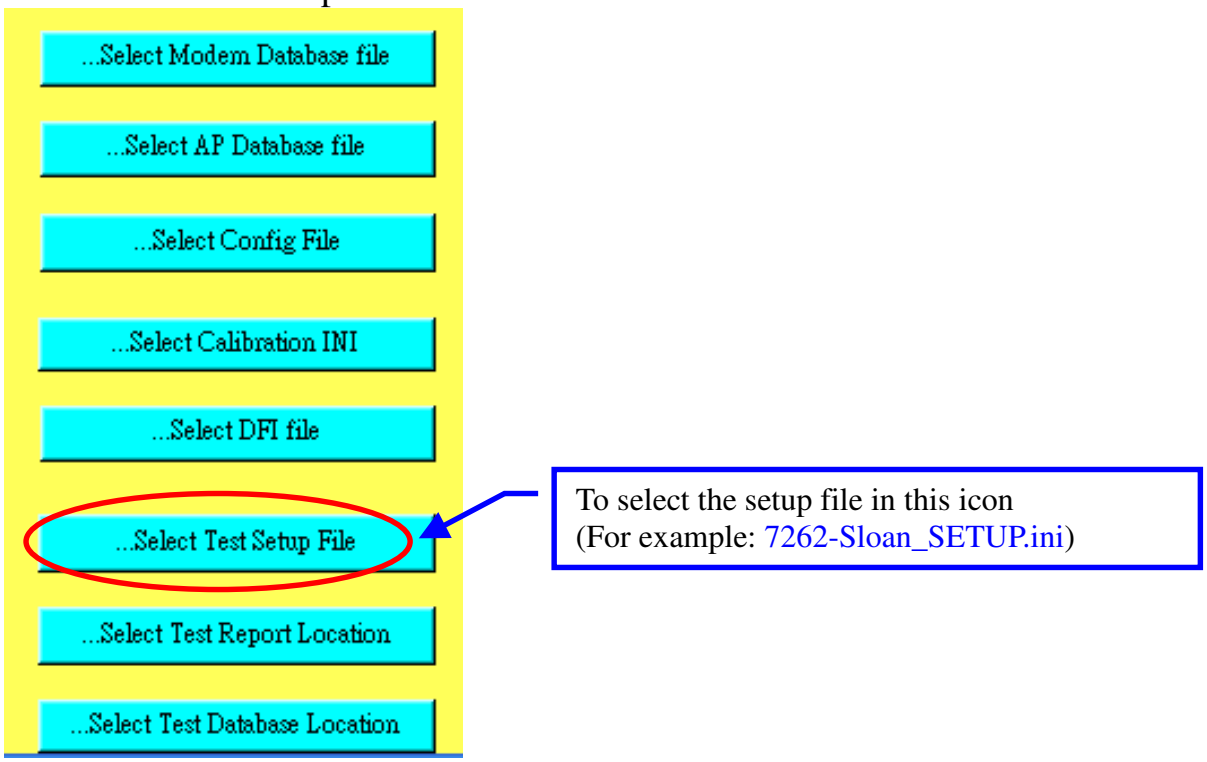
Setting your GSM/EDGE Tester



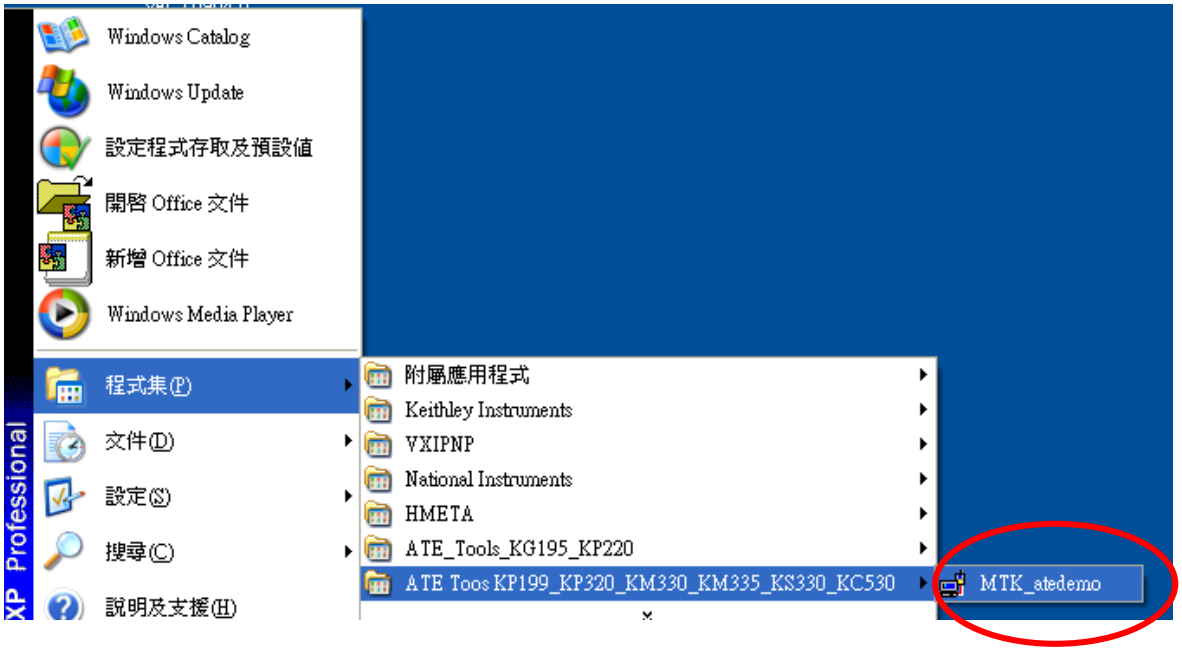
Choose your download com port



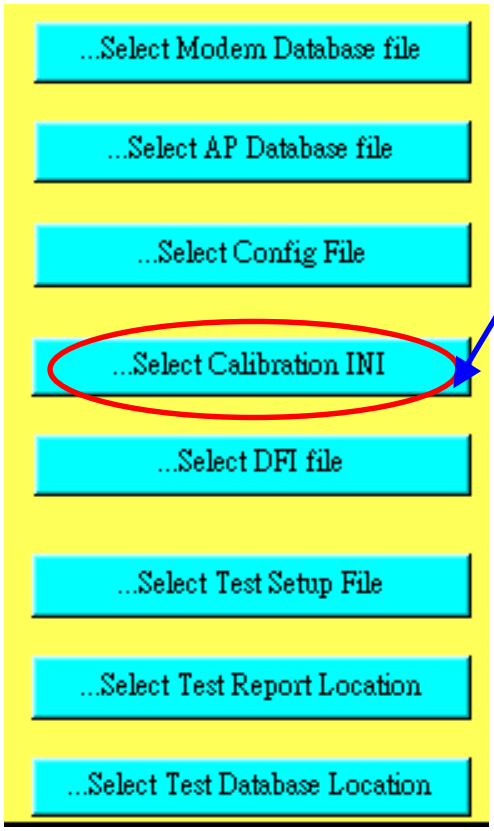
Choose “select test setup file”



Execute MTK _ ate demo again

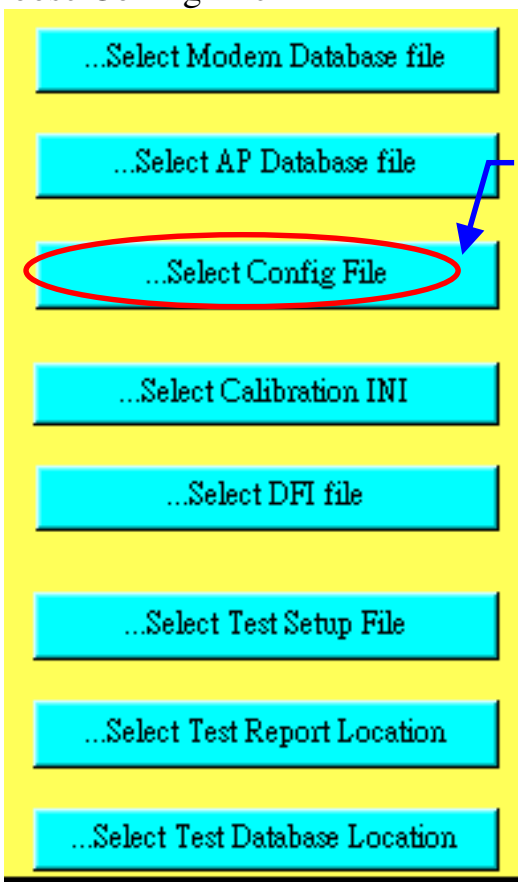


Choose Calibration INI



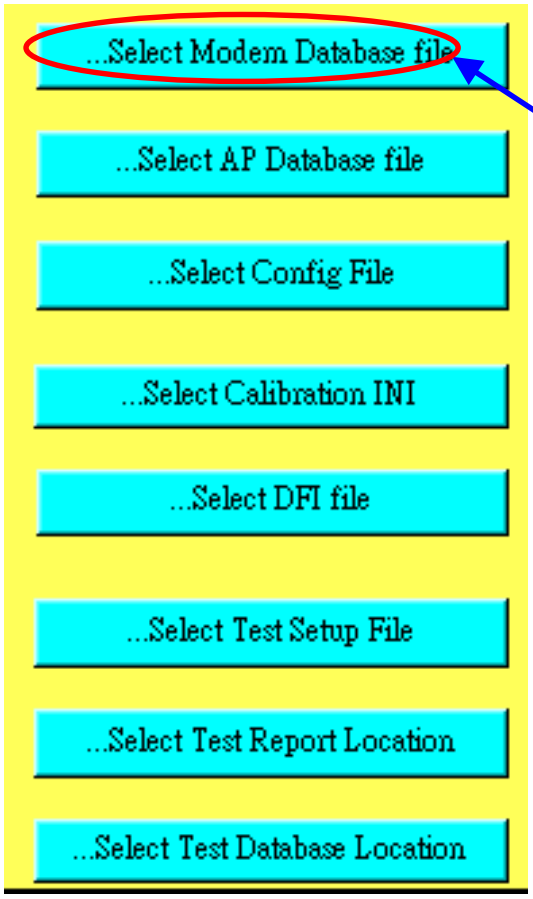
To select the ini file in this icon
(For example: 7262-Sloan.ini)

Choose Con fig File



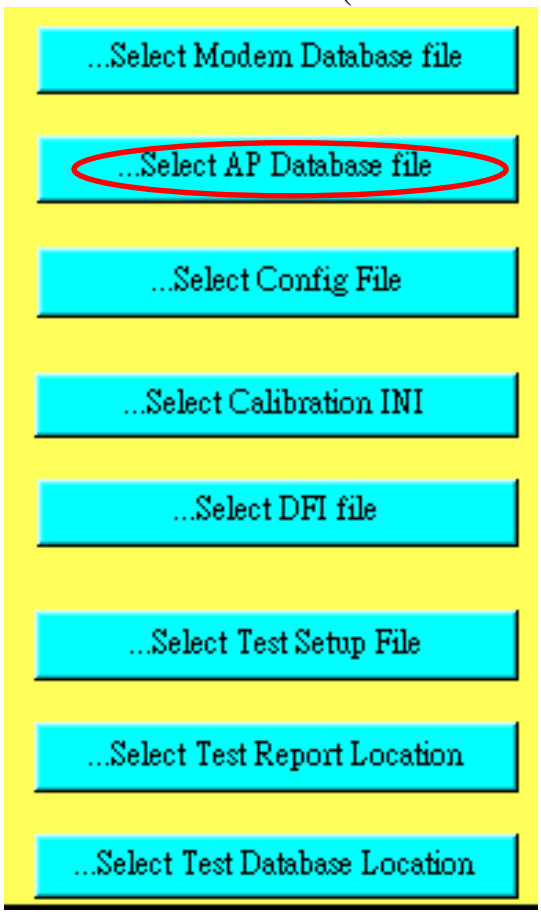
To select the CFG file in this icon
(For example: 7262-Sloan.cfg)

Choose NVRAM Database file



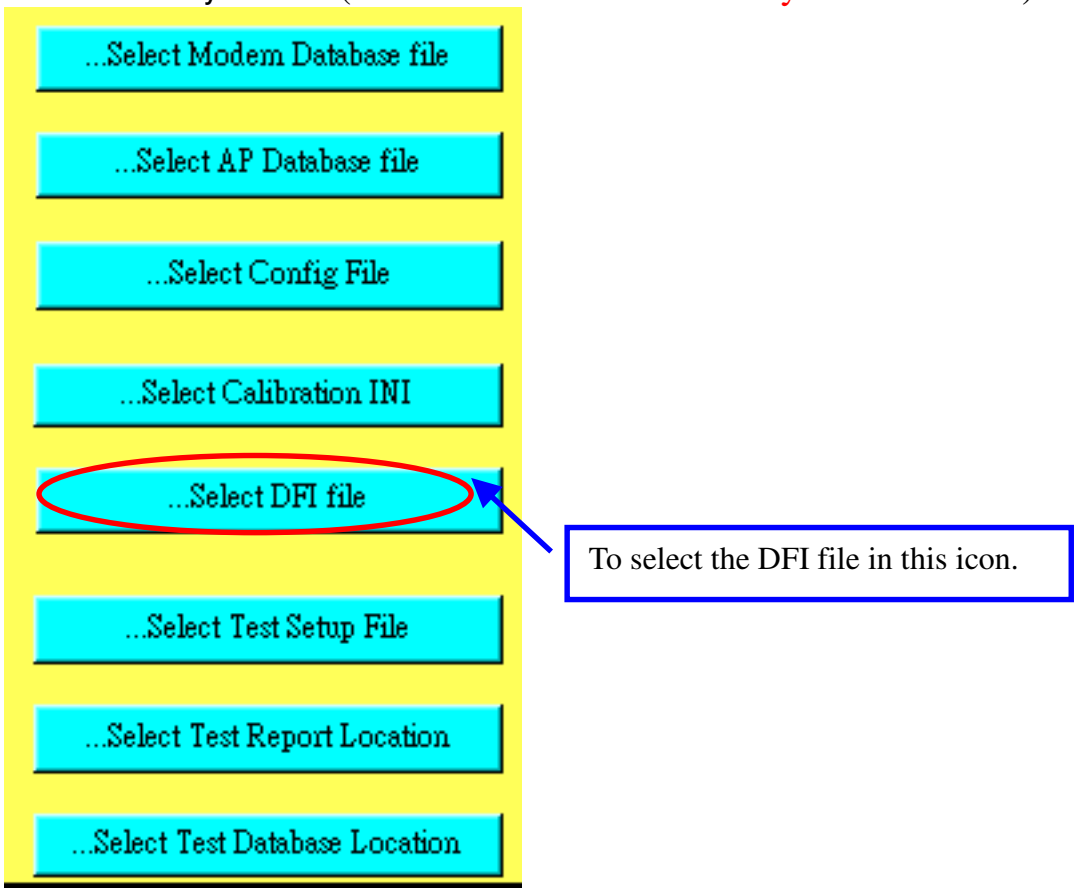
To select the SW database in this icon.

Choose AP database file (Caution: ONLY Smart phone need choose it)



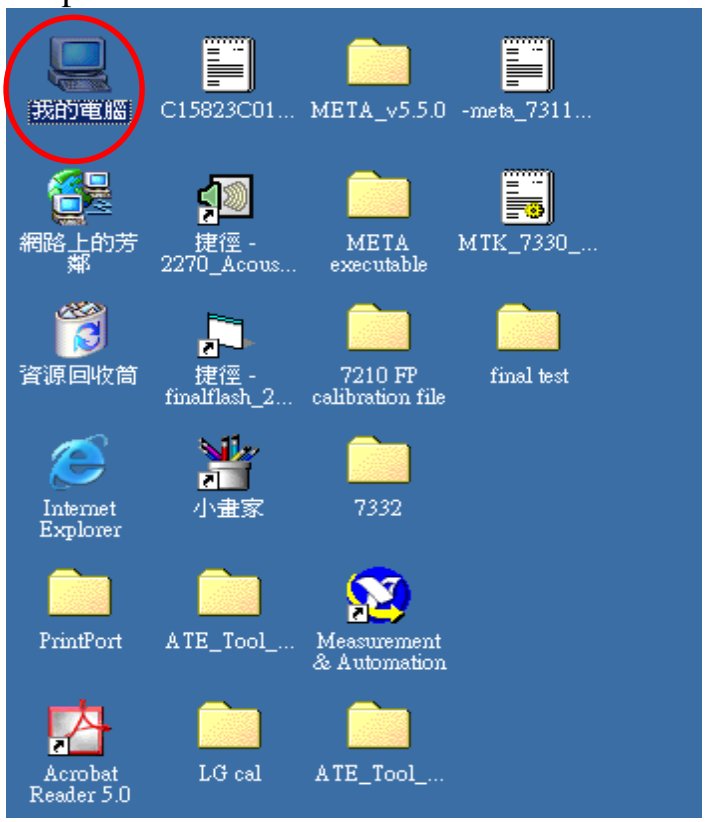
To select the AP database in this icon.

Choose Battery DFI file (Caution: ONLY Smart battery need choose it)

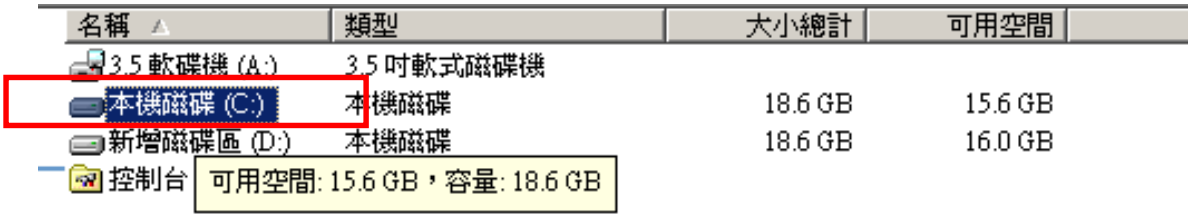


How to setup your test report location

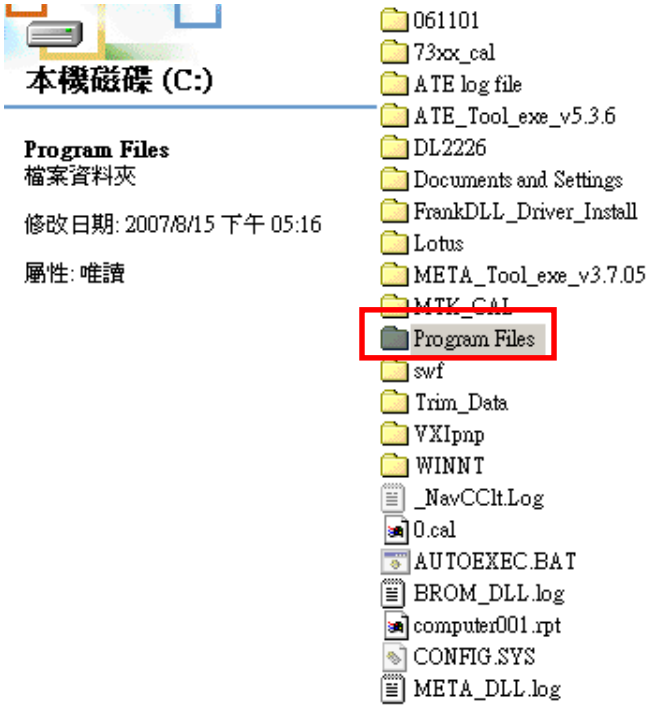
Choose my computer



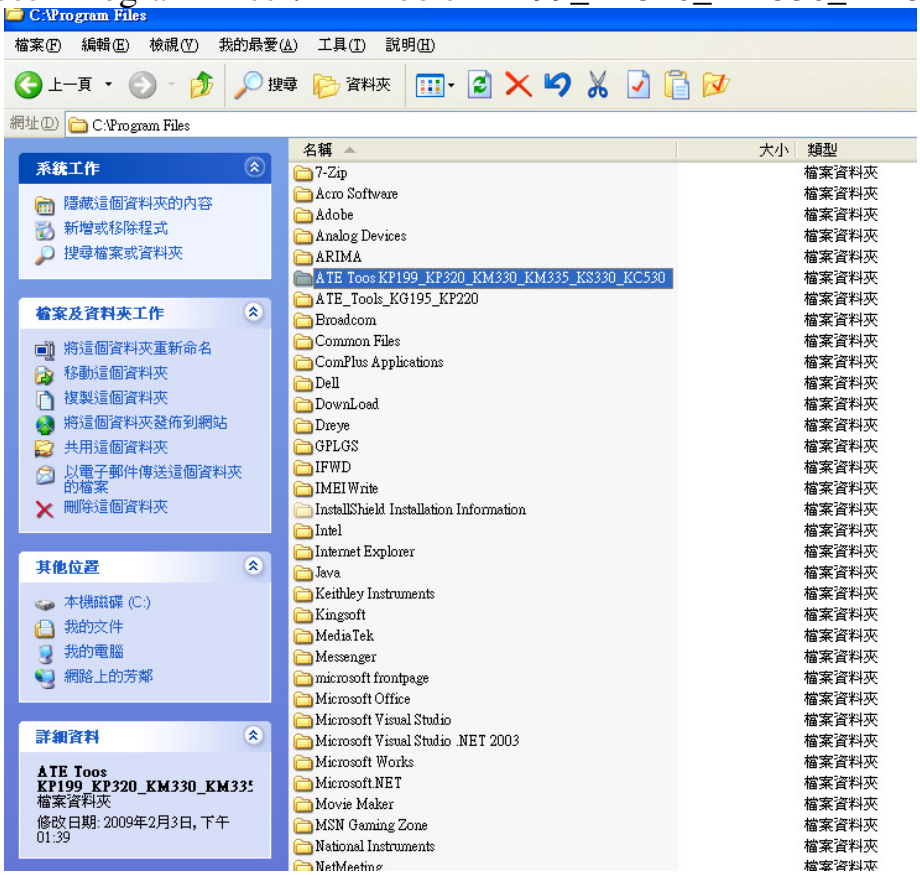
Choose “C” disk



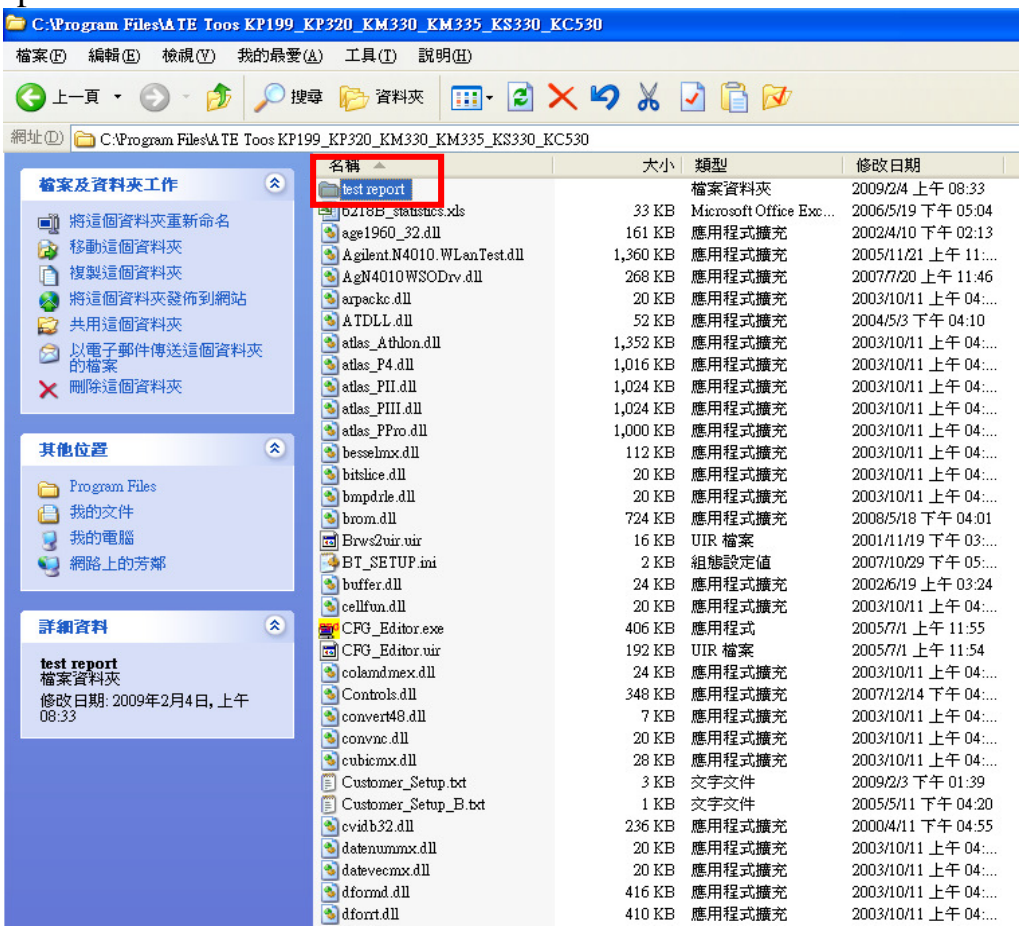
Choose “program files”



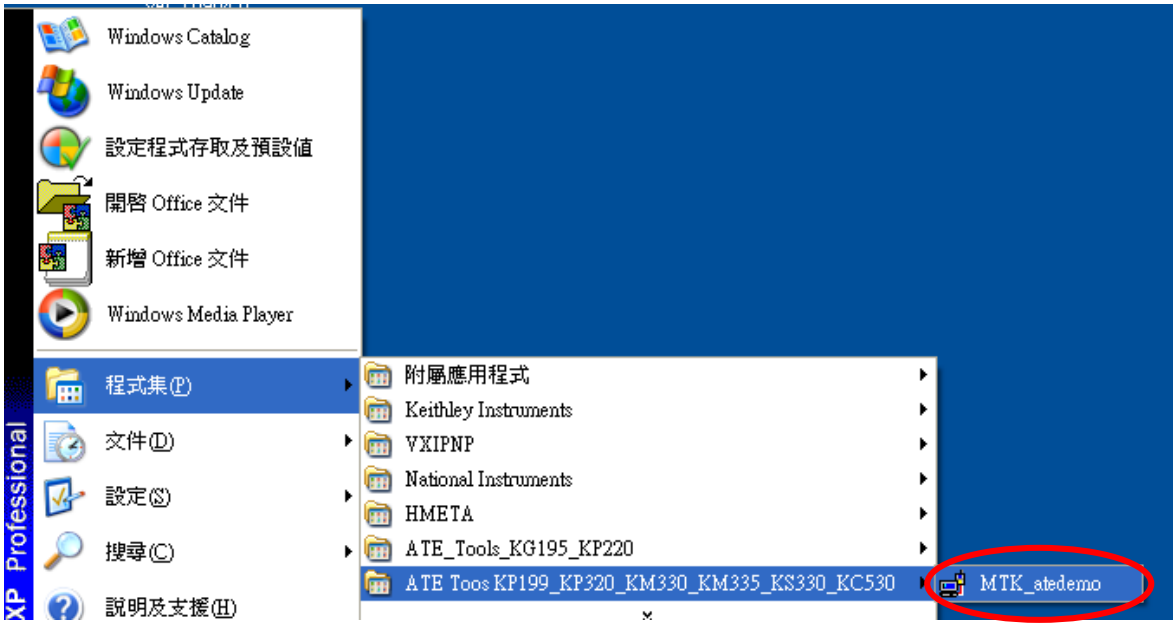
Choose “Program Files \ATE Tools KP199_KP320_KM330_KM335_KC530”file



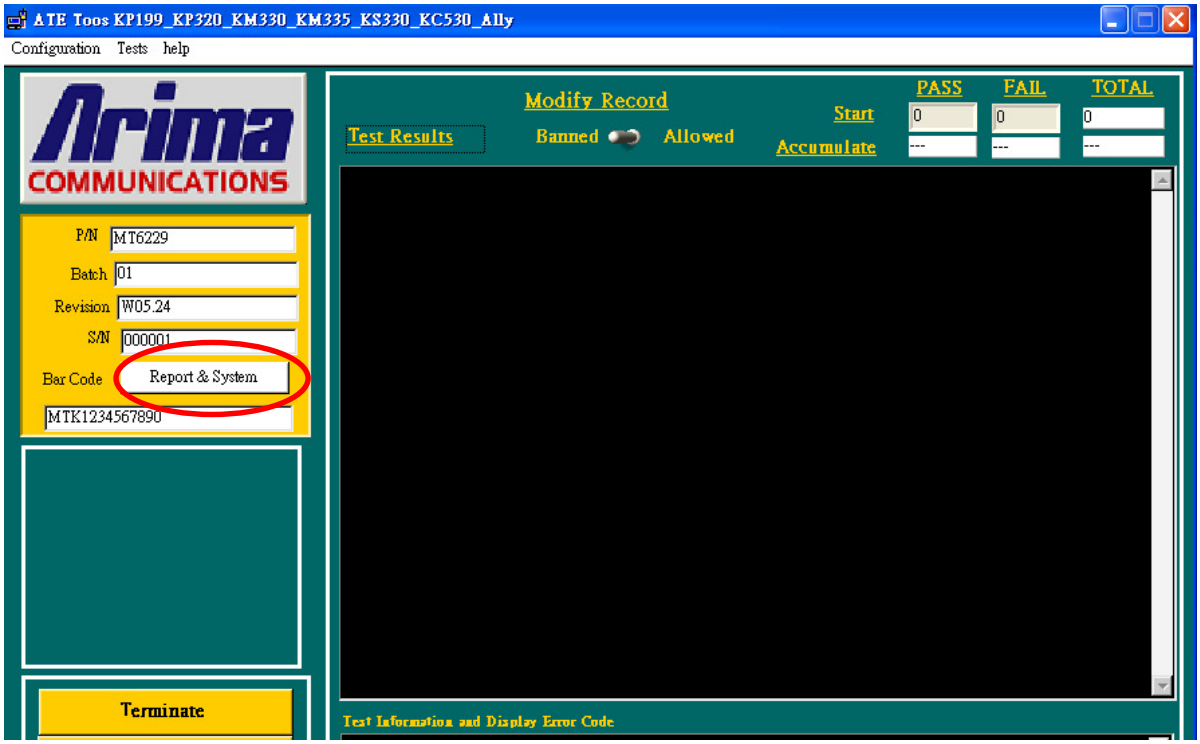
Setup new file and leave the window



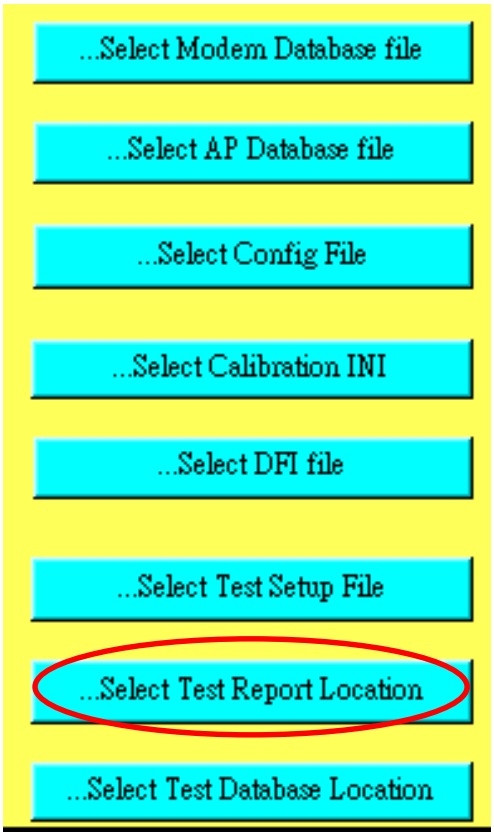
Execute MTK _ ate demo



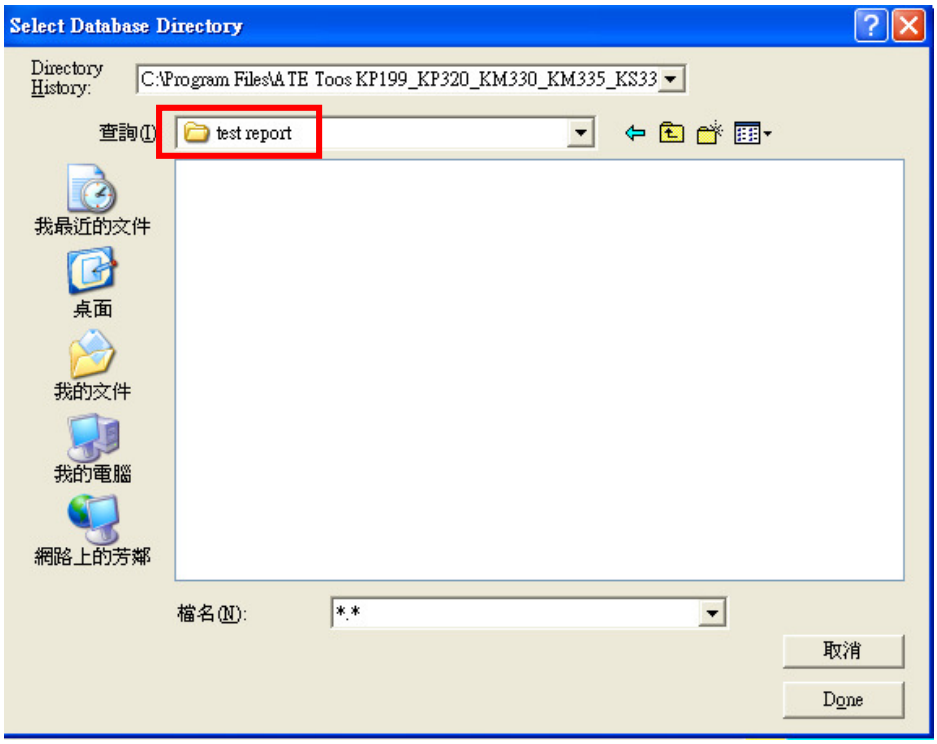
Press Report & System button



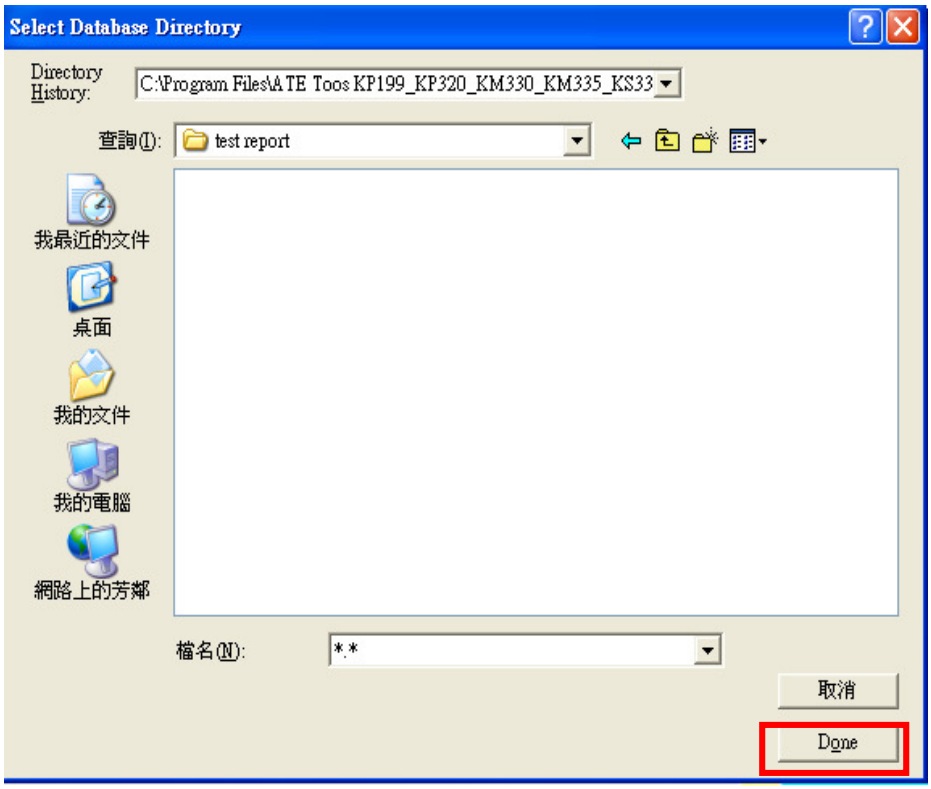
Press “select test report location”



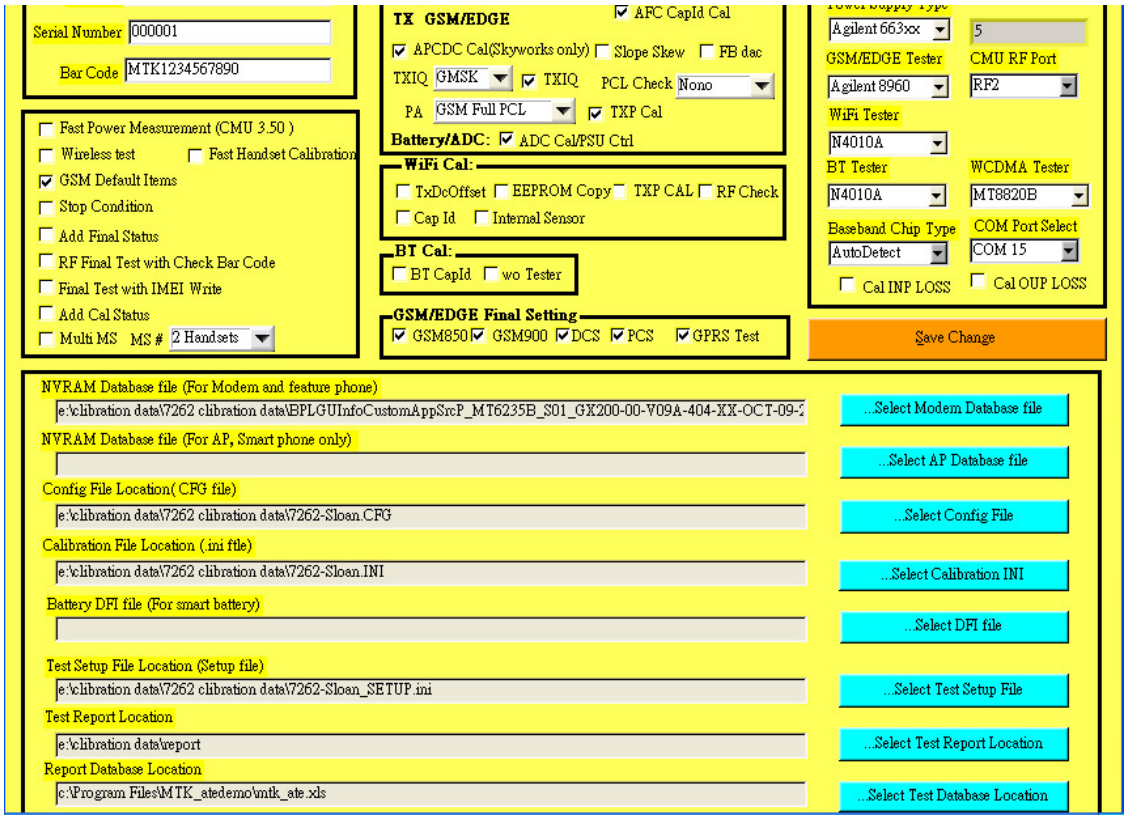
Choose your setup report



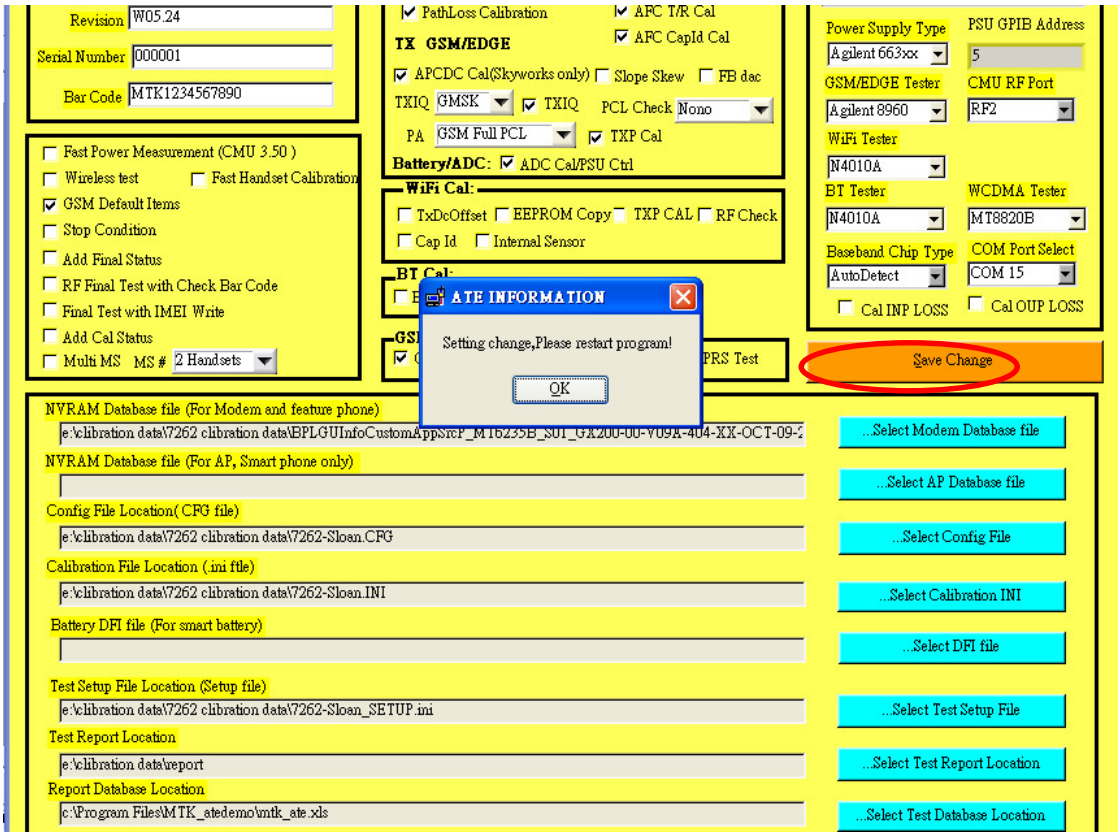
Press “Done”



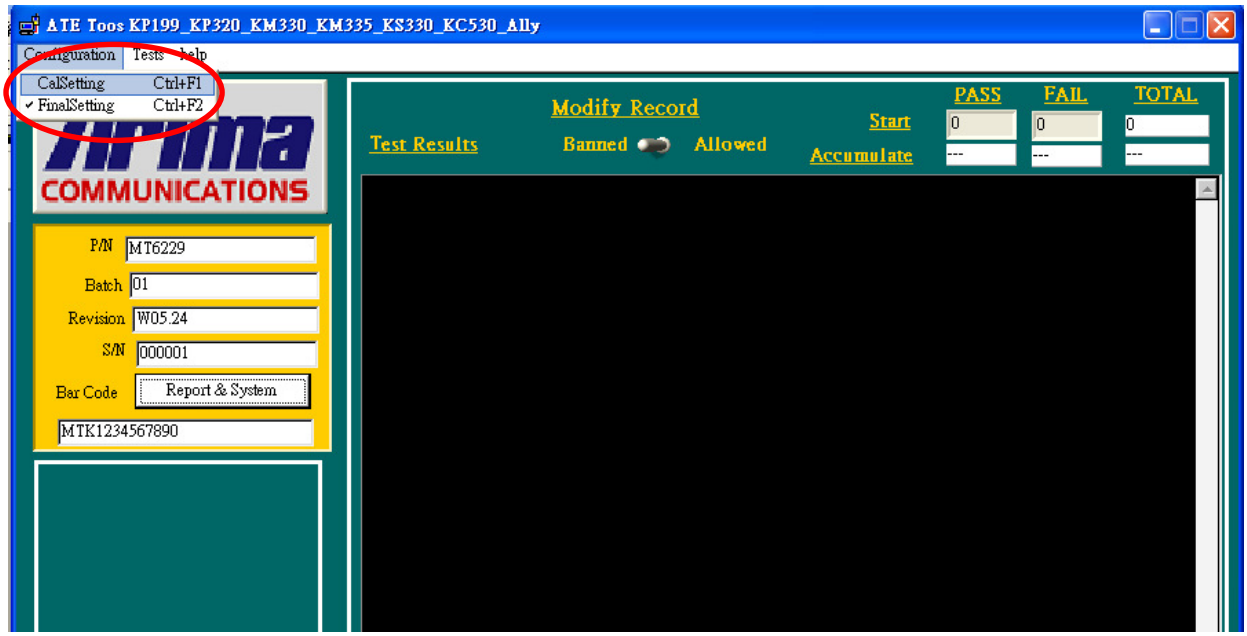
Setup finish



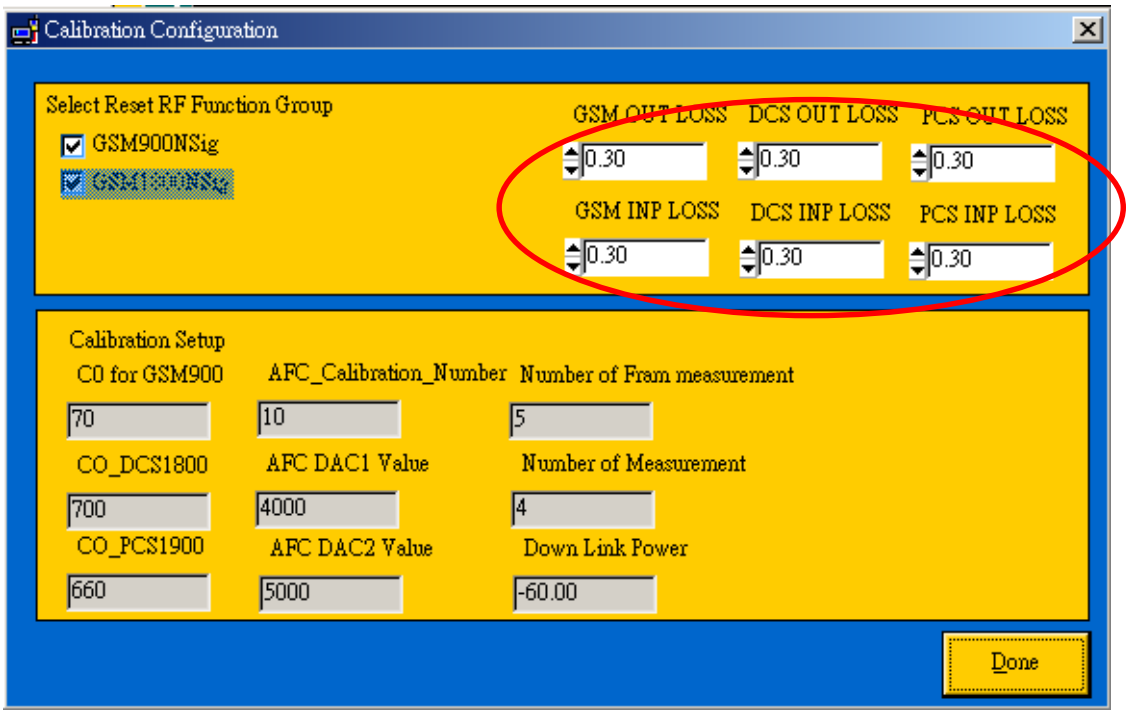
When you finish the setup then you press save change icon.



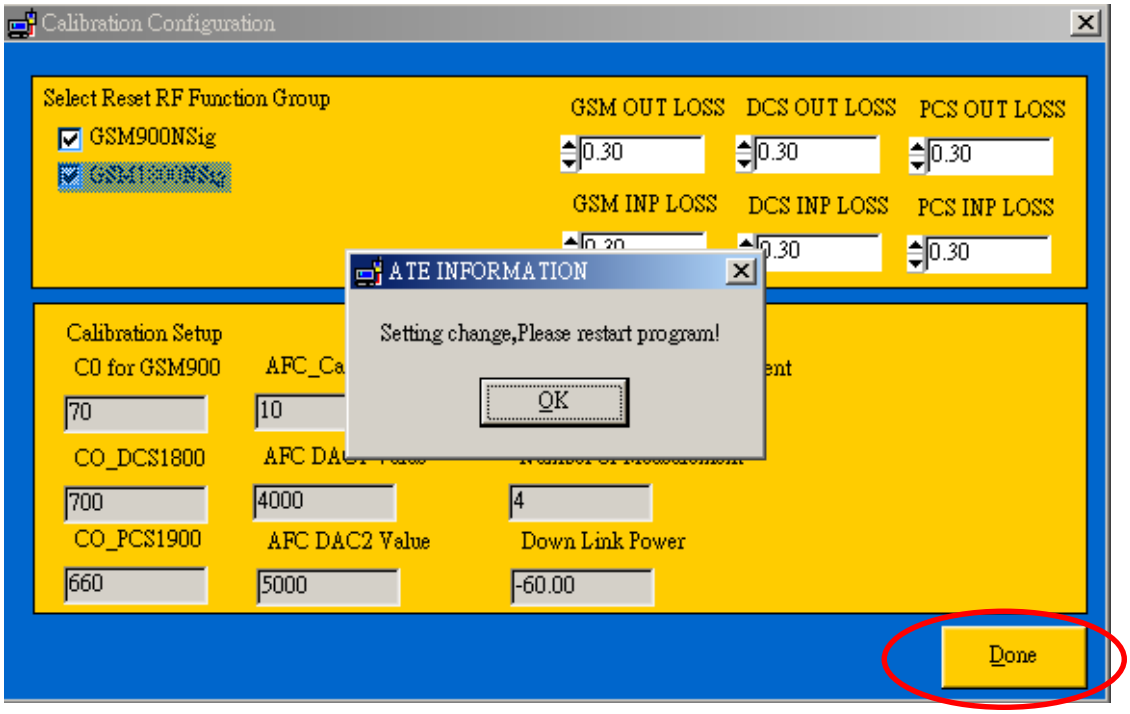
Press Configuration choose Cal Setting



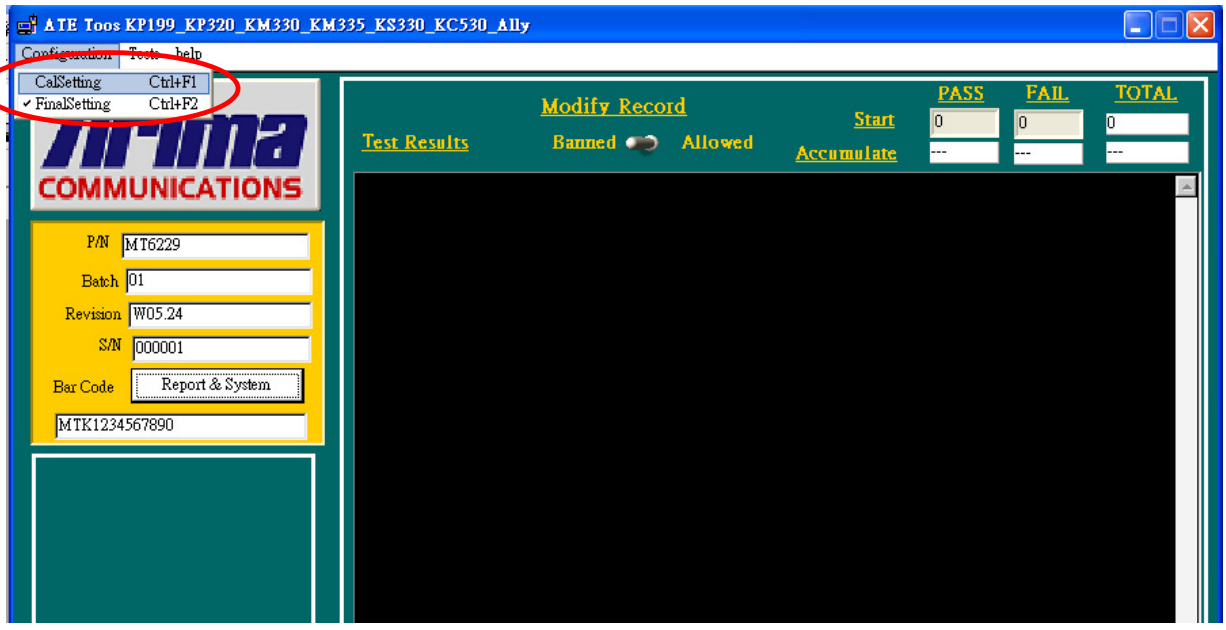
Setting your cable loss



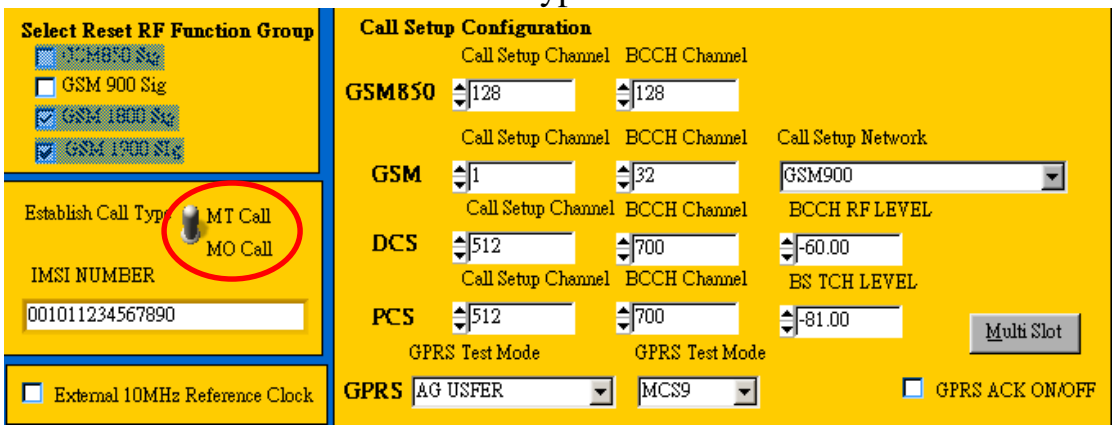
Press Done to save



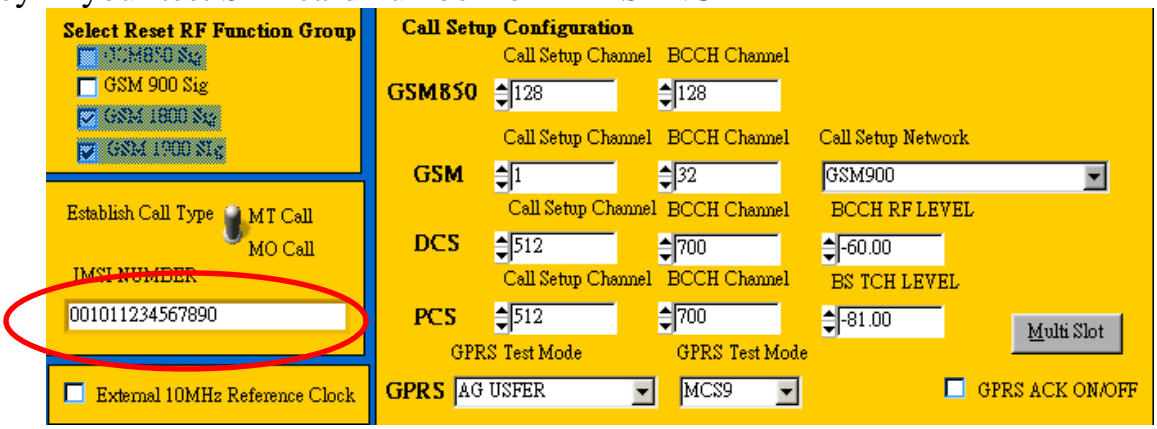
Press Configuration choose Final setting



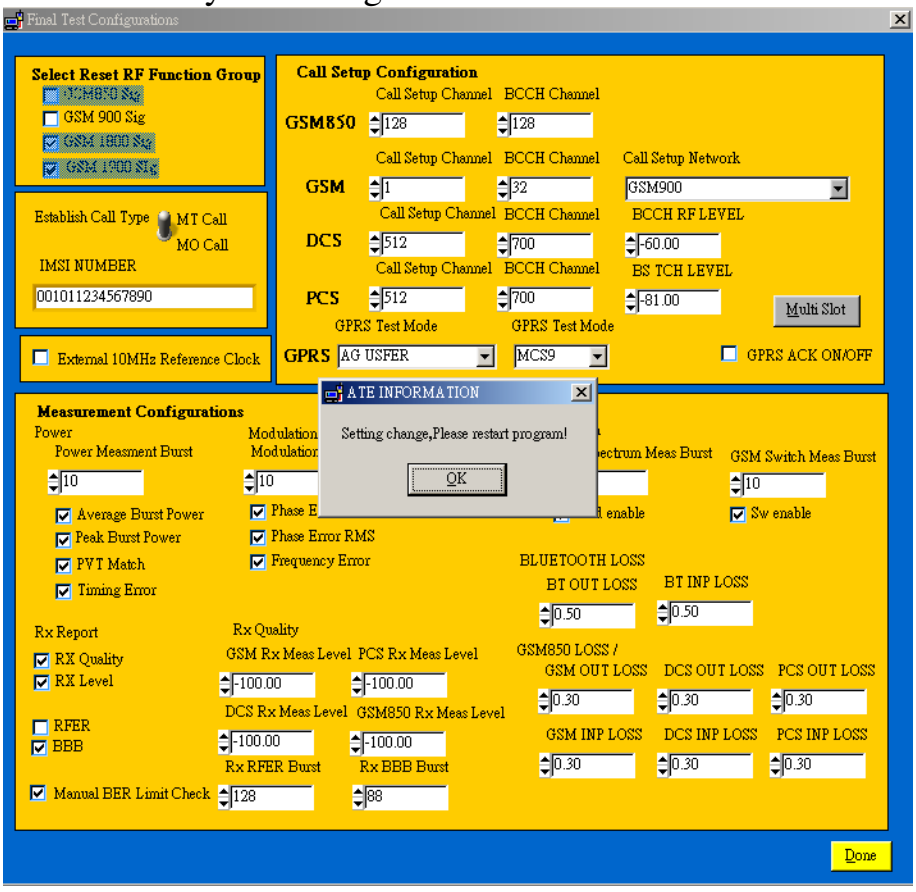
Choose “MT Call” from Establish Call Type



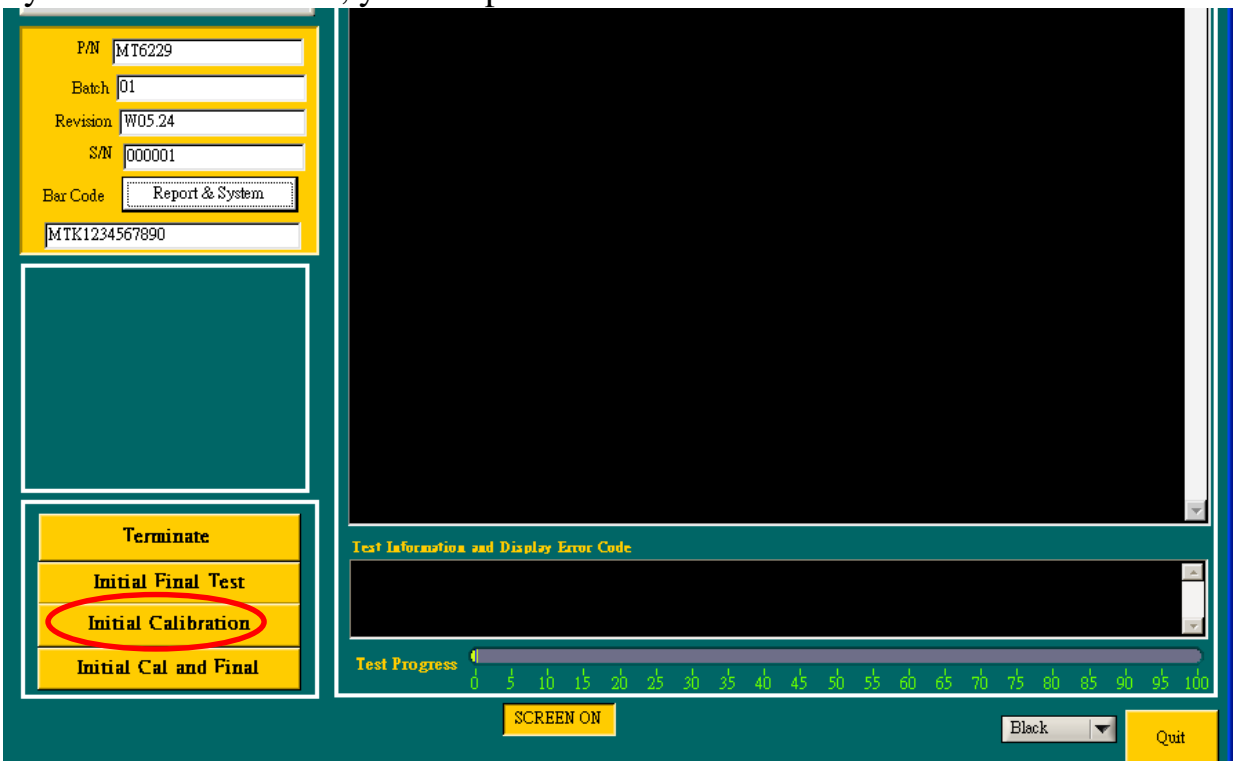
Key in your test SIM card number form IMSI NUMBER



Press “Done” and save your setting

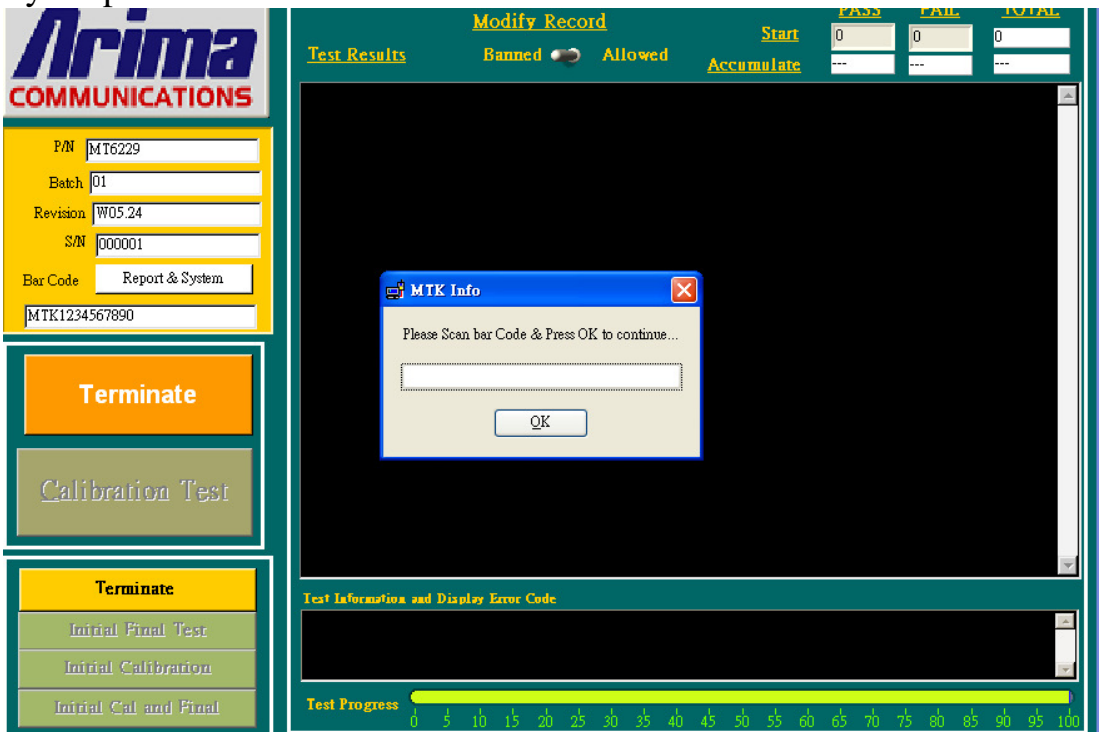


If you want calibration , you can press “initial calibration”

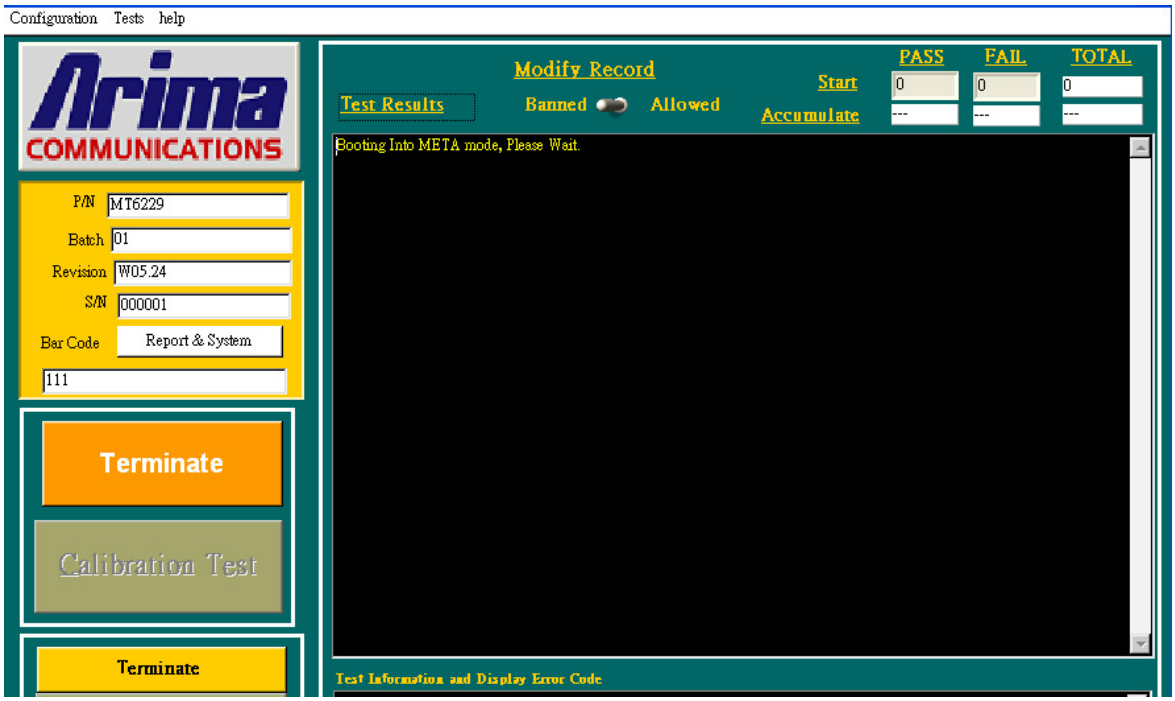


Press Calibration Test

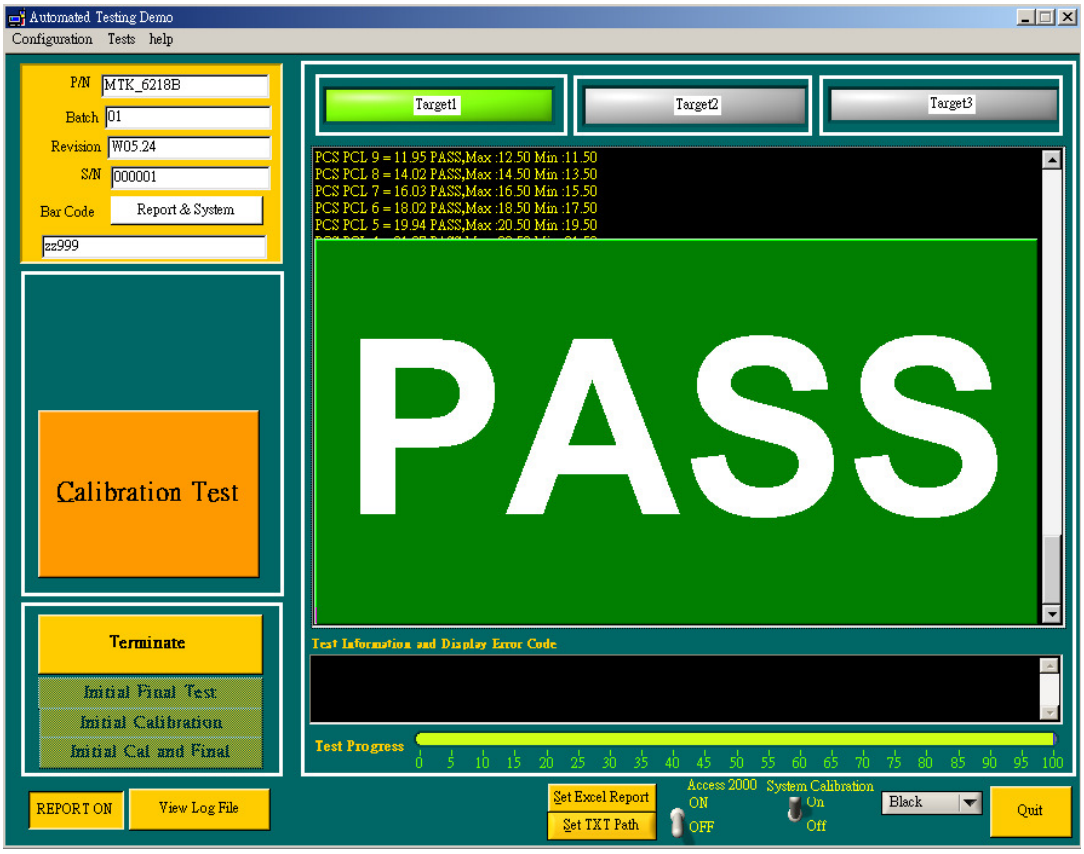
Key-in your phone bar Code



Press your phone of power on key and Start calibration



Calibration is ok and will show “PASS”

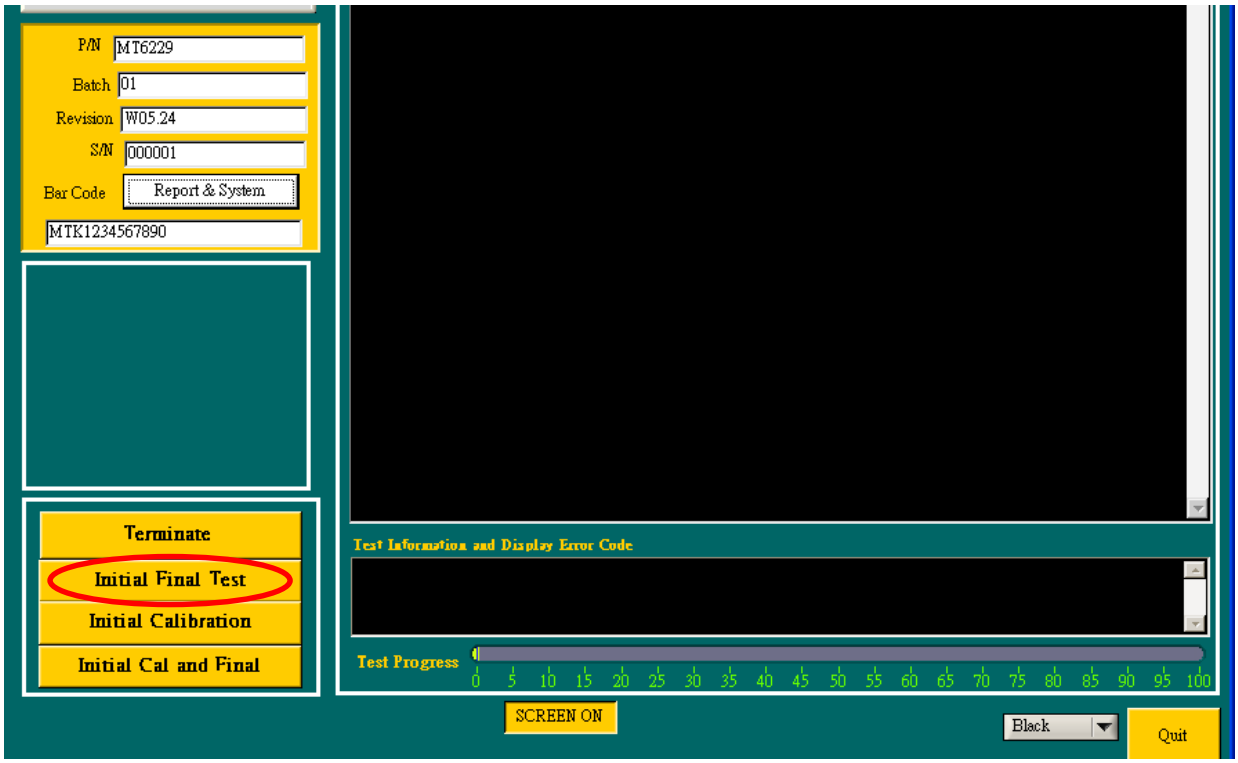


You can see the test report

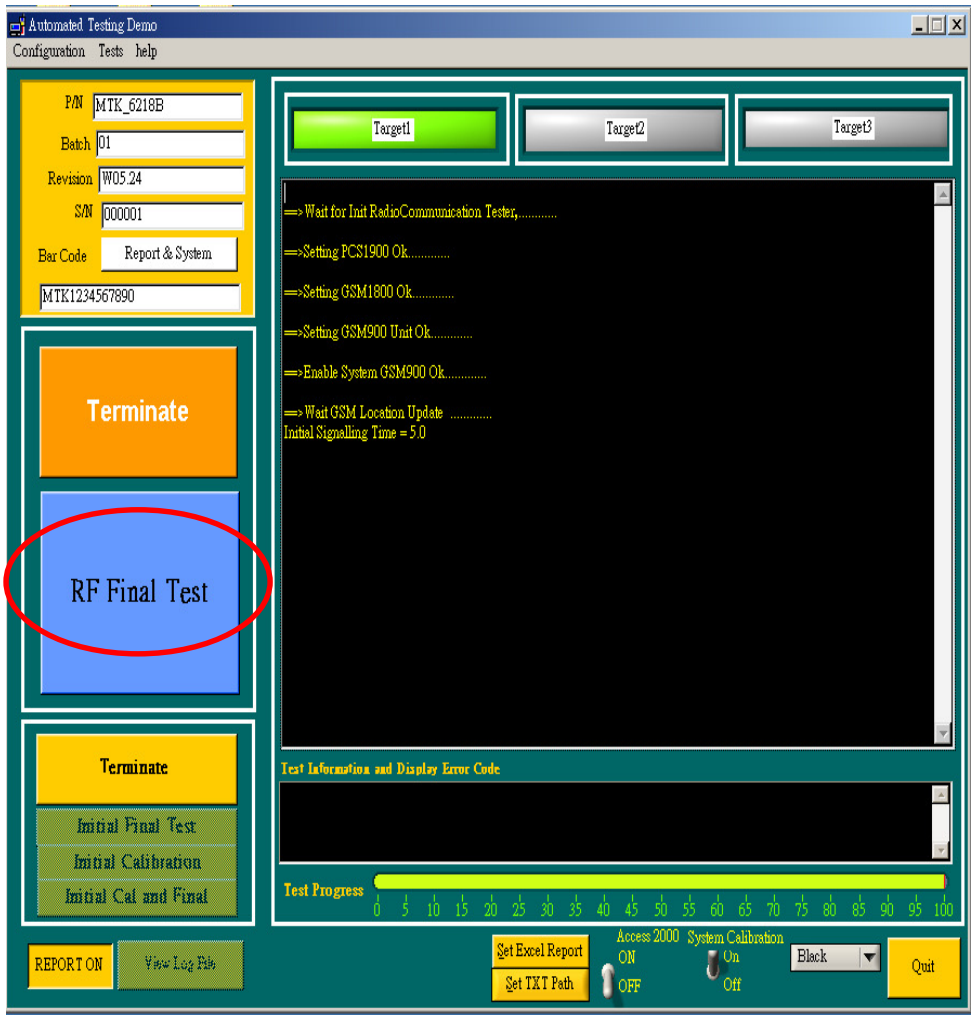
```
------------
 ATE Tool Version:5.0.3
 Part Number:  MTK_6218B
 Serial Number:  000001
 Revision:  W05.24
 Batch:  01
 Bar Code:  qqq
Error Code:  000
------------


        ==>Wait GSM Location Update  ..............
         Enter into META Mode OK
        AFC Calibration OK
Slope=2.824,min:1.000,max:10.000
Use Default Value=3836
        AFC Calibration time=1.64(sec)
PL GSM TCH 15 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 30 = 1.00  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 45 = 0.88  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 60 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 75 = 1.38  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 80 = 1.50  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 100 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 124 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 975 = 1.50  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 1000 = 1.38  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 1023 = 1.00  Pass MAX:3.00   MIN:-3.00
PL DCS TCH 550 = 0.50  Pass MAX:3.00   MIN:-3.00
PL DCS TCH 590 = 1.00  Pass MAX:3.00   MIN:-3.00
```

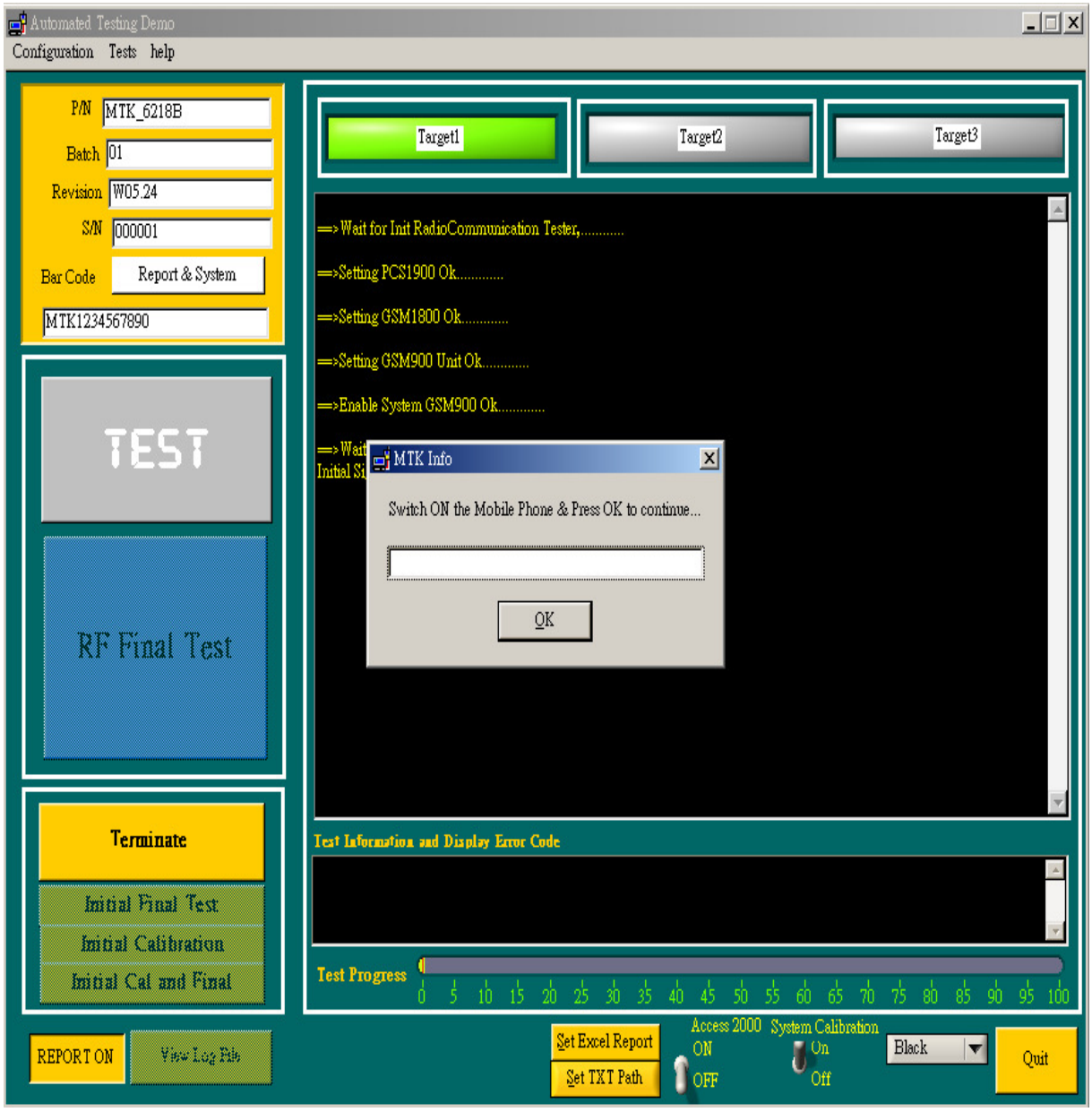
If you want final test , you can press “initial final test “



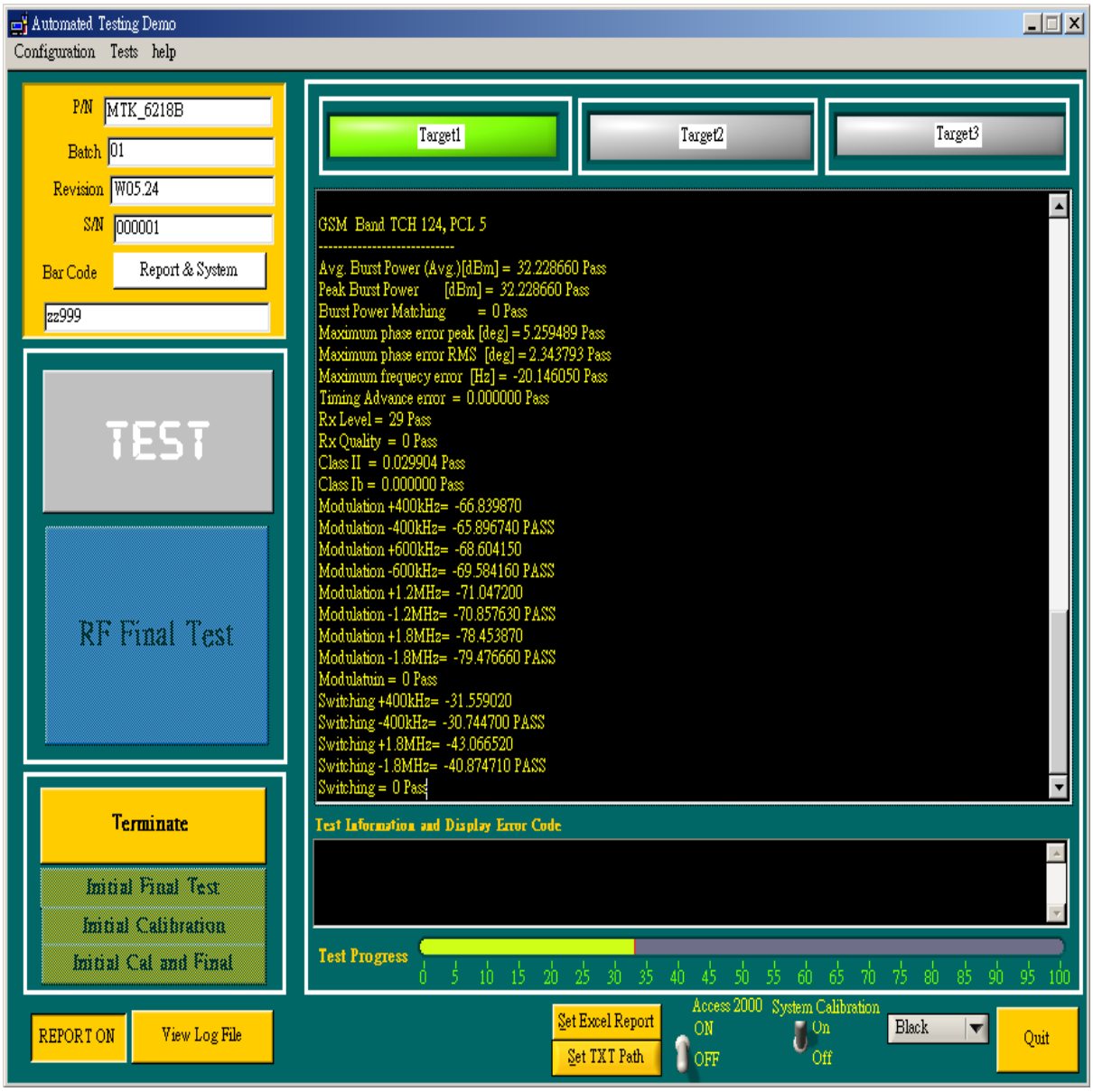
Press “RF Final test”



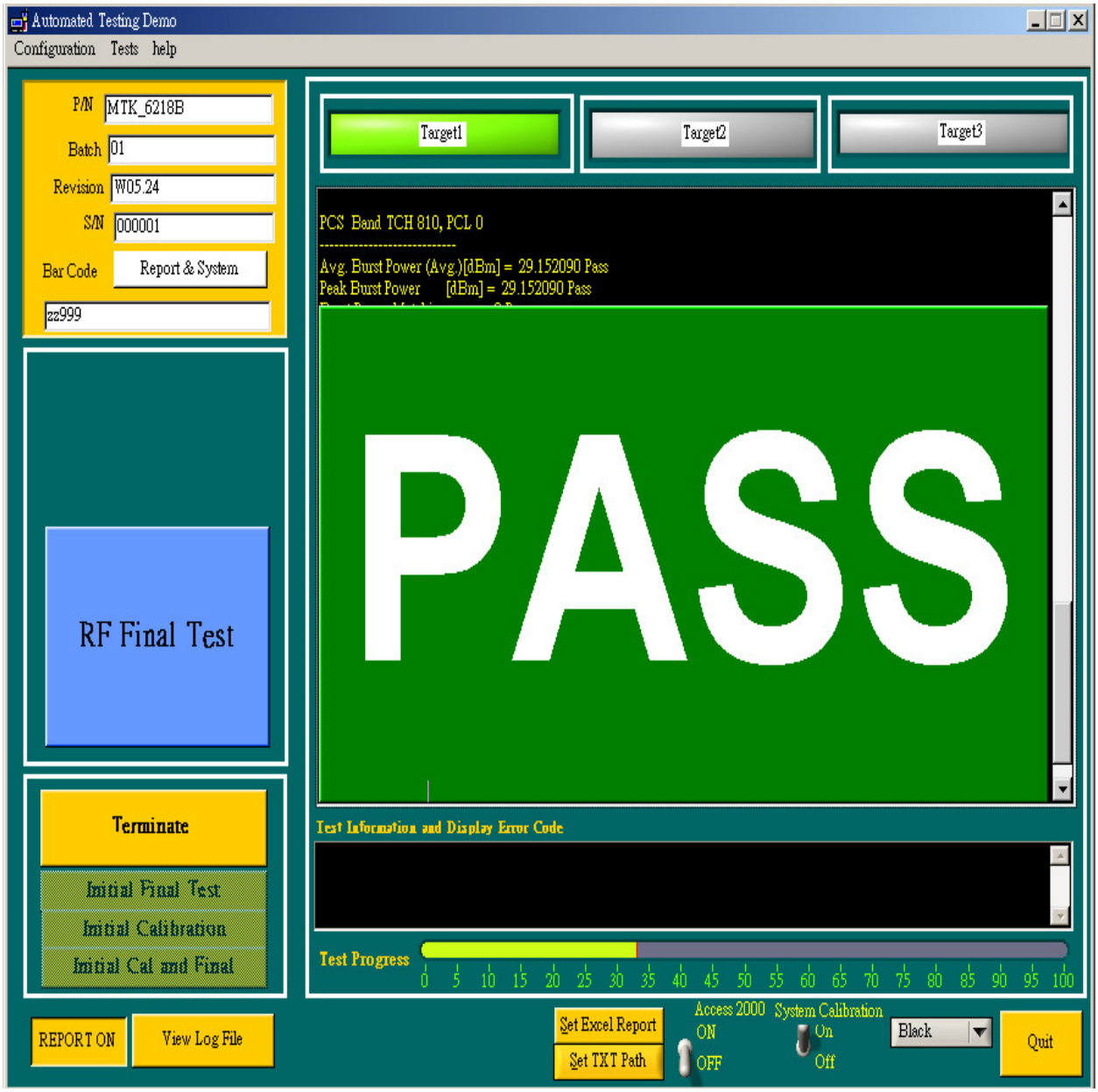
1. Handset to insert SIM card
2. Key-in bar code or IMEI number
3. Power on handset



ATE start final test



If ATE test finish , ATE will show pass

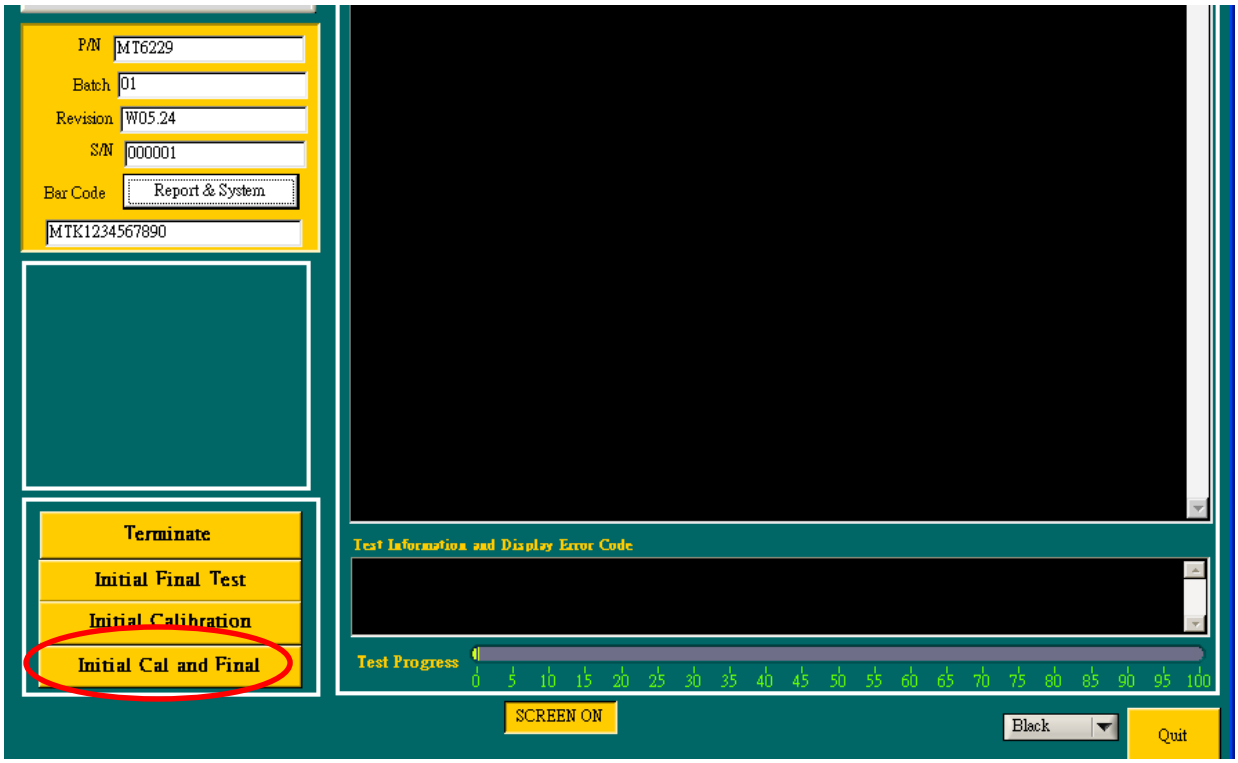


You can see the test report

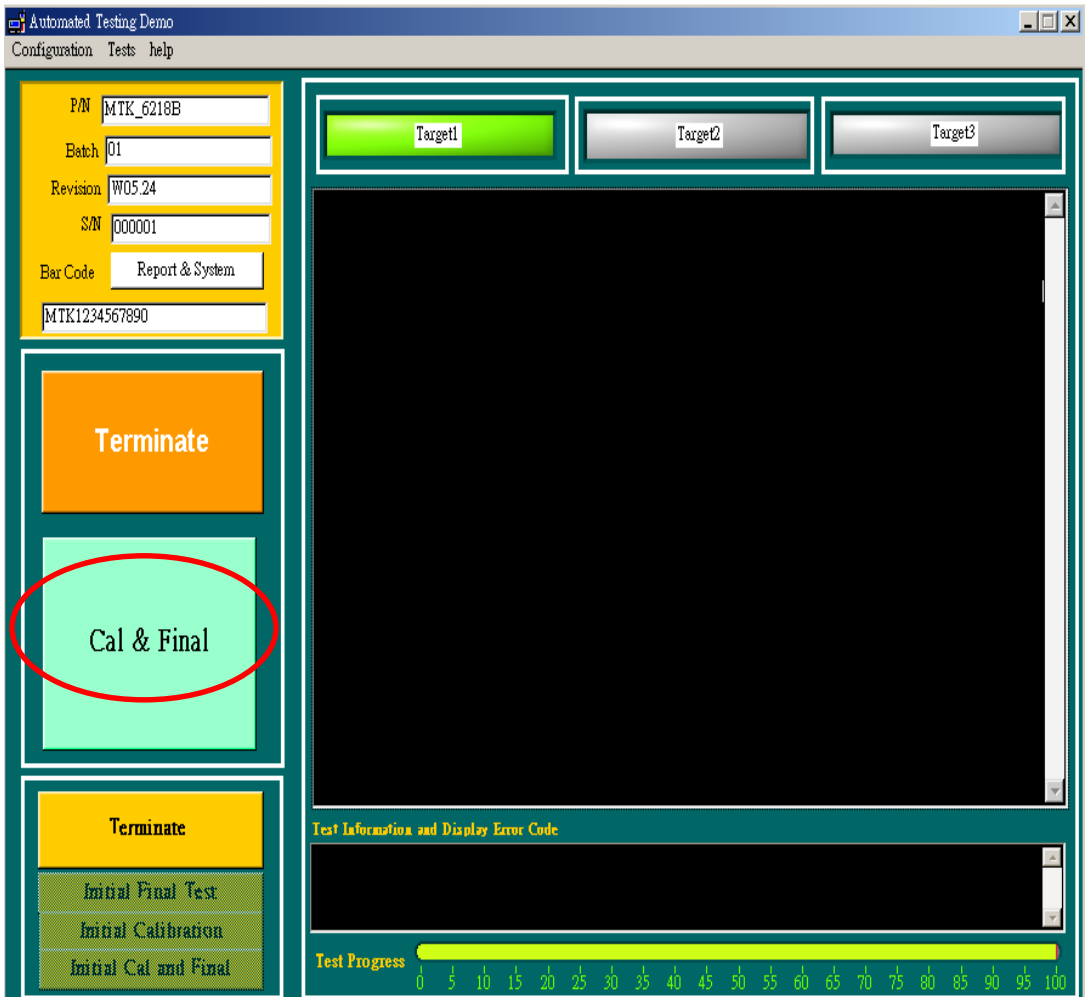
```
------------
 ATE Tool Version:5.0.3
 Part Number:  MTK_6218B
 Serial Number:  000001
 Revision:  W05.24
 Batch:  01
 Bar Code:  qqq
Error Code:  000
------------


         ==>Wait GSM Location Update  ..............
          Enter into META Mode OK
         AFC Calibration OK
Slope=2.824,min:1.000,max:10.000
Use Default Value=3836
         AFC Calibration time=1.64(sec)
PL GSM TCH 15 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 30 = 1.00  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 45 = 0.88  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 60 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 75 = 1.38  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 80 = 1.50  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 100 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 124 = 1.25  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 975 = 1.50  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 1000 = 1.38  Pass MAX:3.00   MIN:-3.00
PL GSM TCH 1023 = 1.00  Pass MAX:3.00   MIN:-3.00
PL DCS TCH 550 = 0.50  Pass MAX:3.00   MIN:-3.00
PL DCS TCH 590 = 1.00  Pass MAX:3.00   MIN:-3.00
```

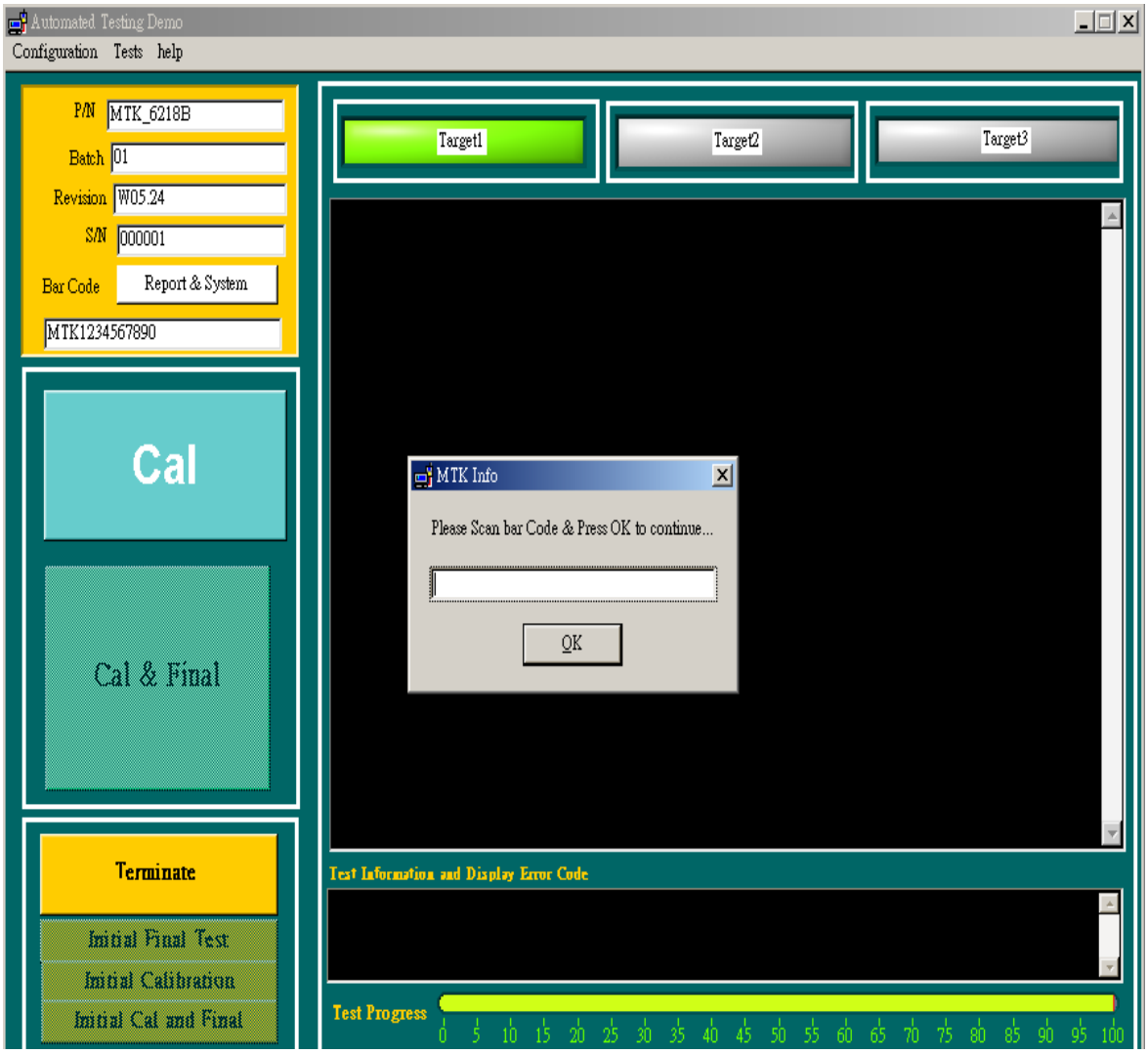
If you want initial cal and final test , you can press “initial cal and final test”



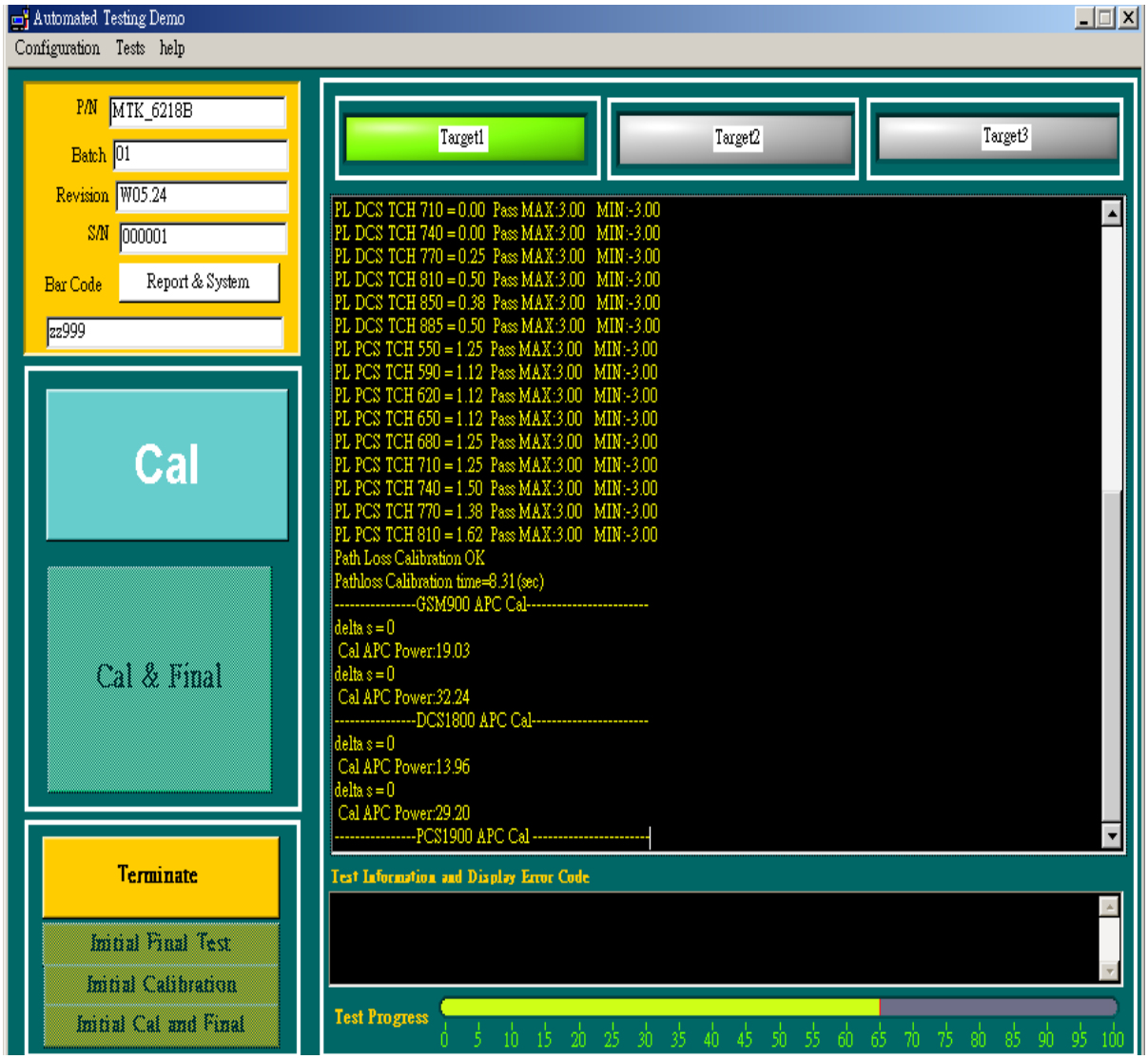
Press “Cal & Final”



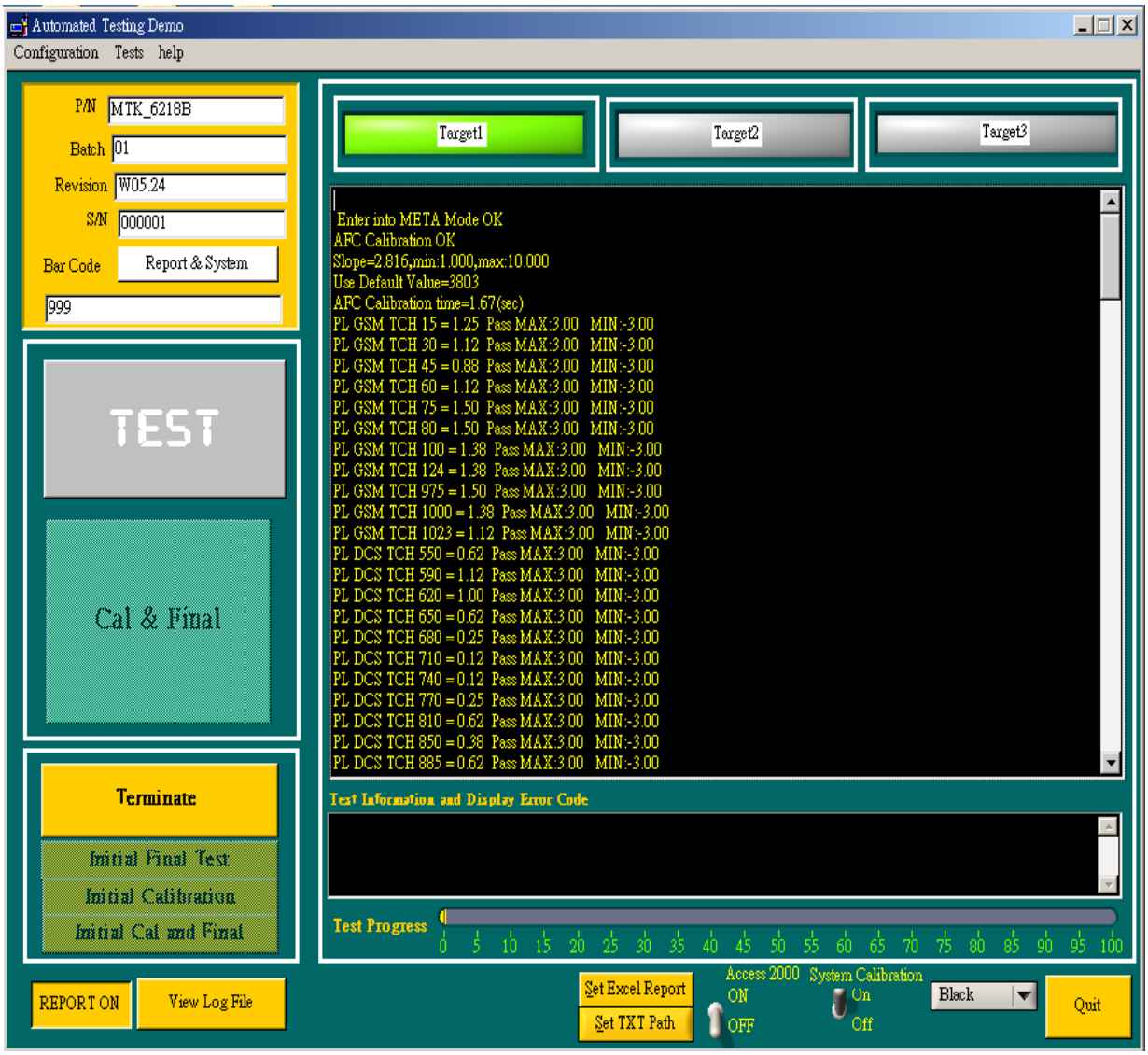
1.Handset to insert SIM card
2.Key-in bar code or IMEI number
3.Power on handset



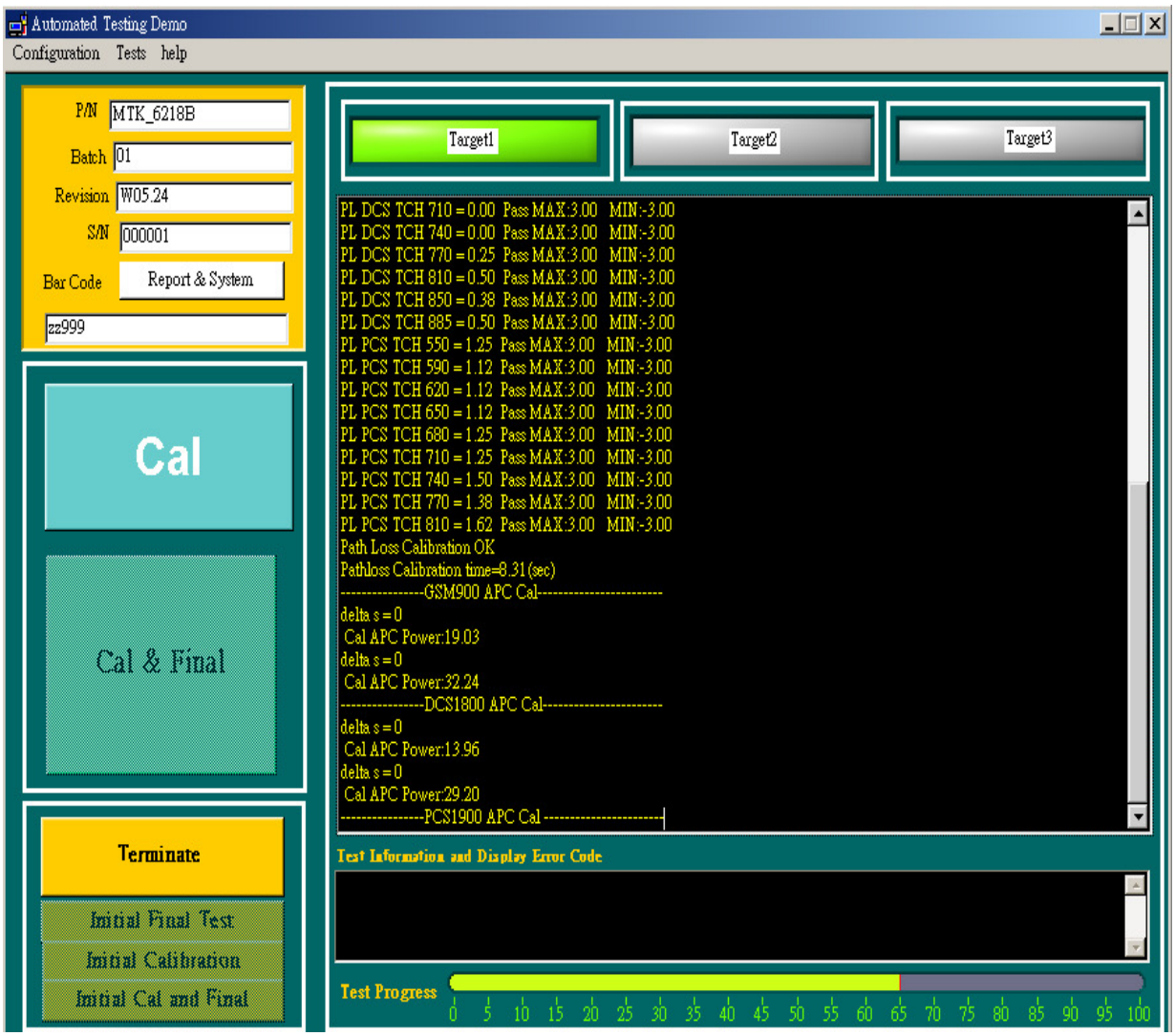
Start calibration



Calibration finish and power on handset again

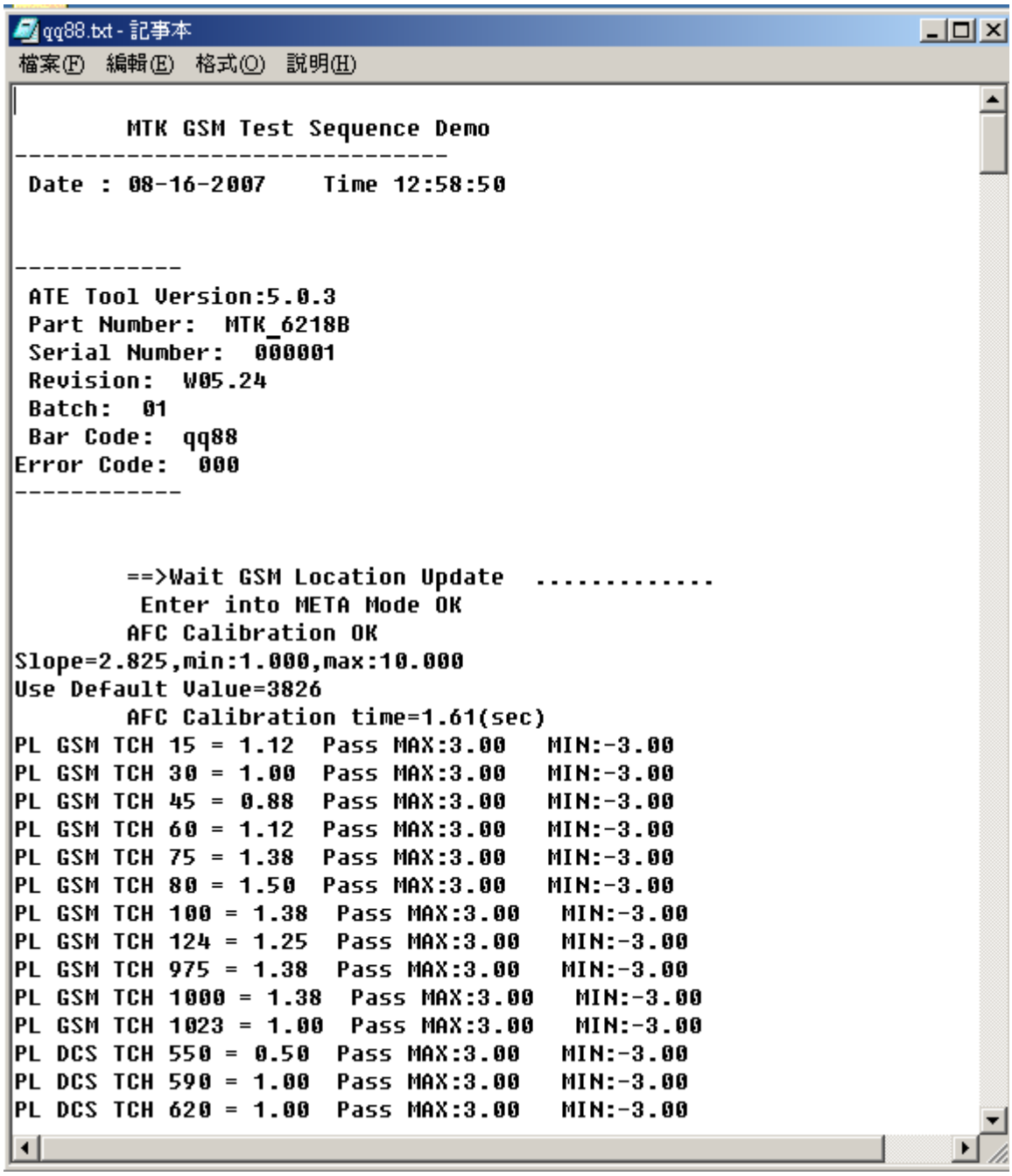


Start final test



Finish “Cal & Final test”

Ate show the test report

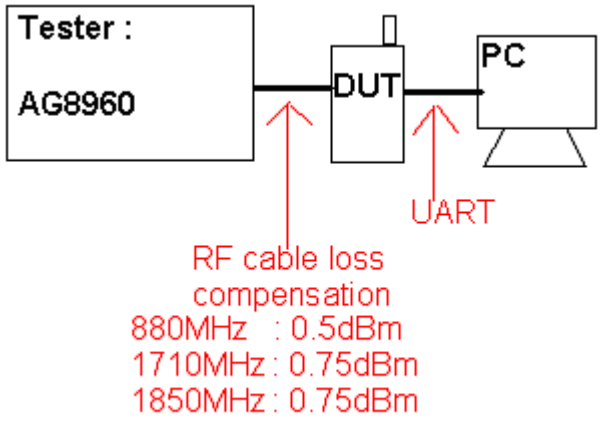


12. STAND ALONE TEST

12.1 GX200 RF TX & RX Test :

Test Configuration & Expected Outcome

Test Configuration :



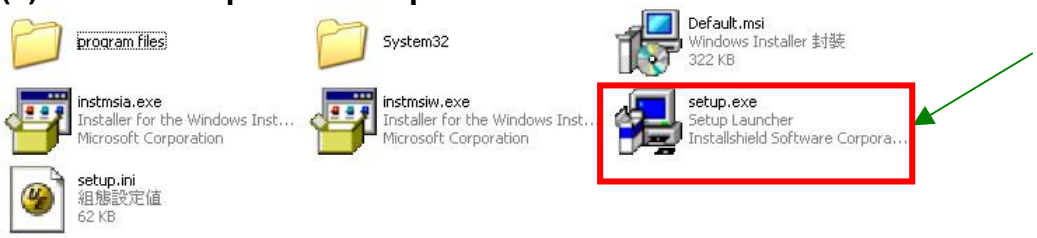
Expected Outcome :

TX	**power**	**: 32.5**	**+/-**	**1.5 dBm**	**for GSM900**
TX	**power**	**: 29.5**	**+/-**	**1.5 dBm**	**for DCS1800, PCS1900**
RX	**power**	**: -85**	**+/-**	**4 dBm**	**for GSM900, DCS1800, PCS1900**

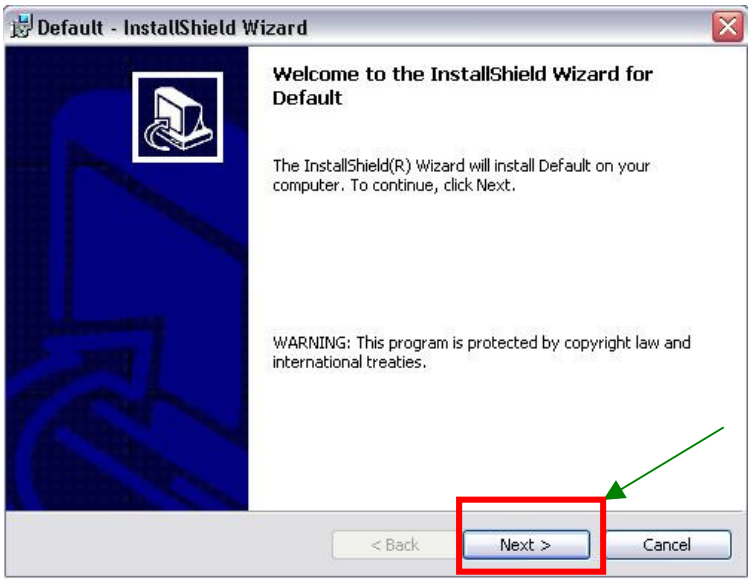
12.2 META Install & RF TX & RX Check

META Tool Install process :

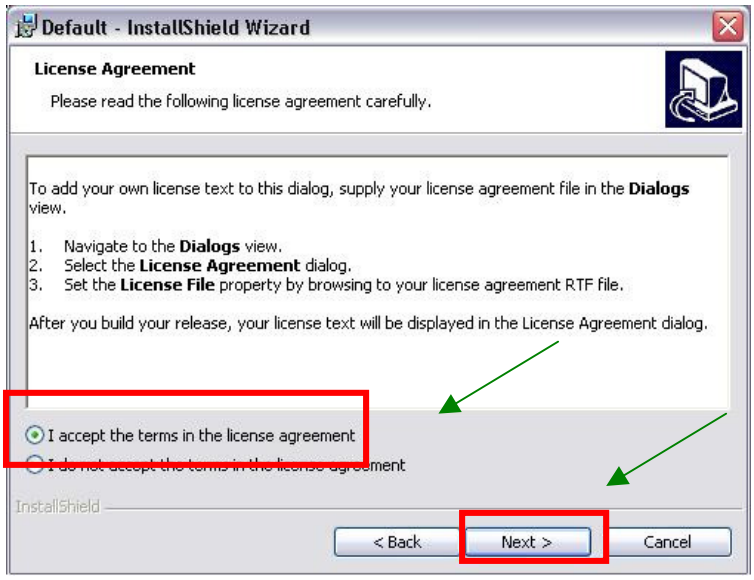
(1) Press “setup.exe” then press



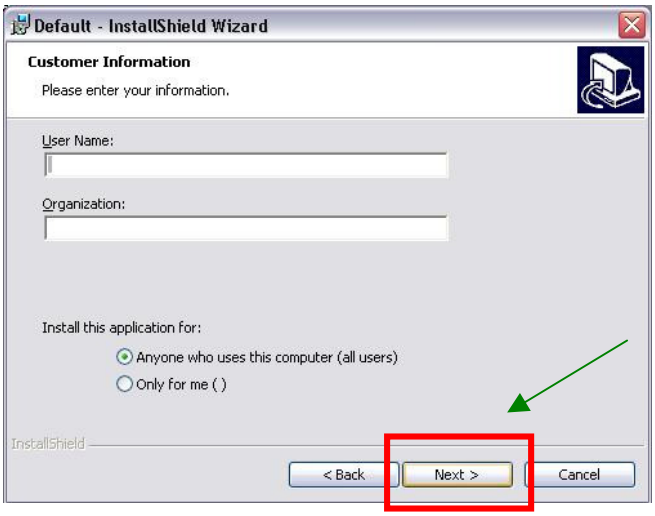
(2) Install Process – press “Next”



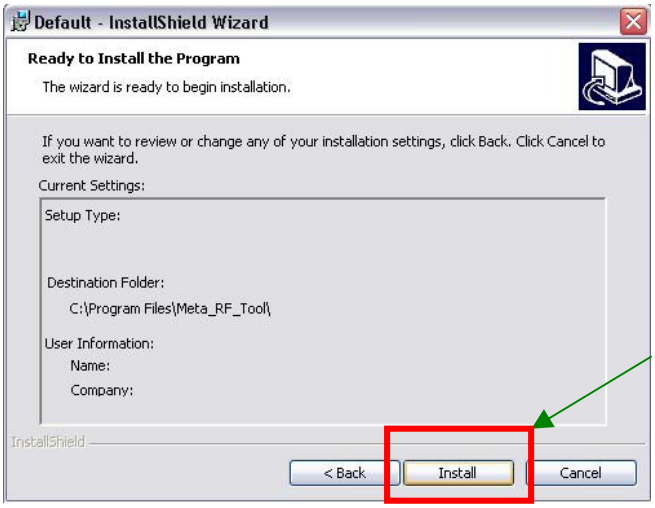
(3) Install Process – press “Next”



(4) Install Process – press “Next”

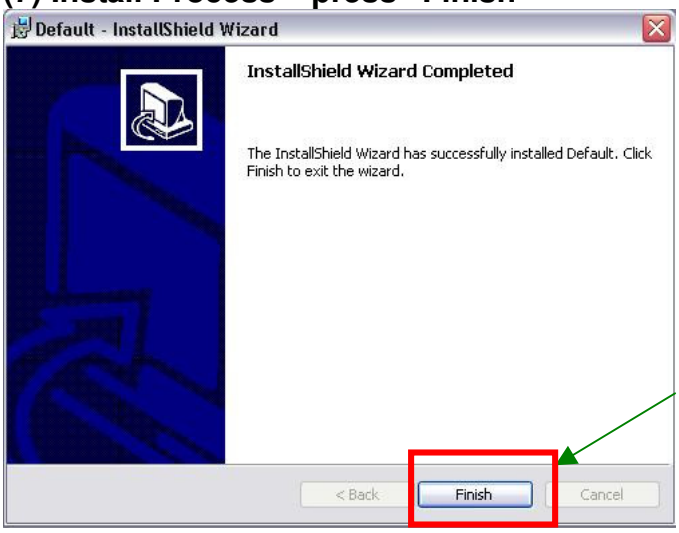


(5) Install Process – press “Next”



(6) Install Process

(7) Install Process – press “Finish”



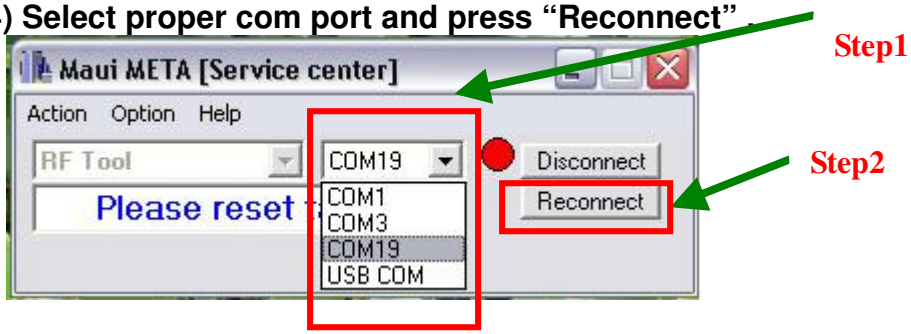
12.3 RF RX Check :

(1) Open " Meta_RF_Tool "

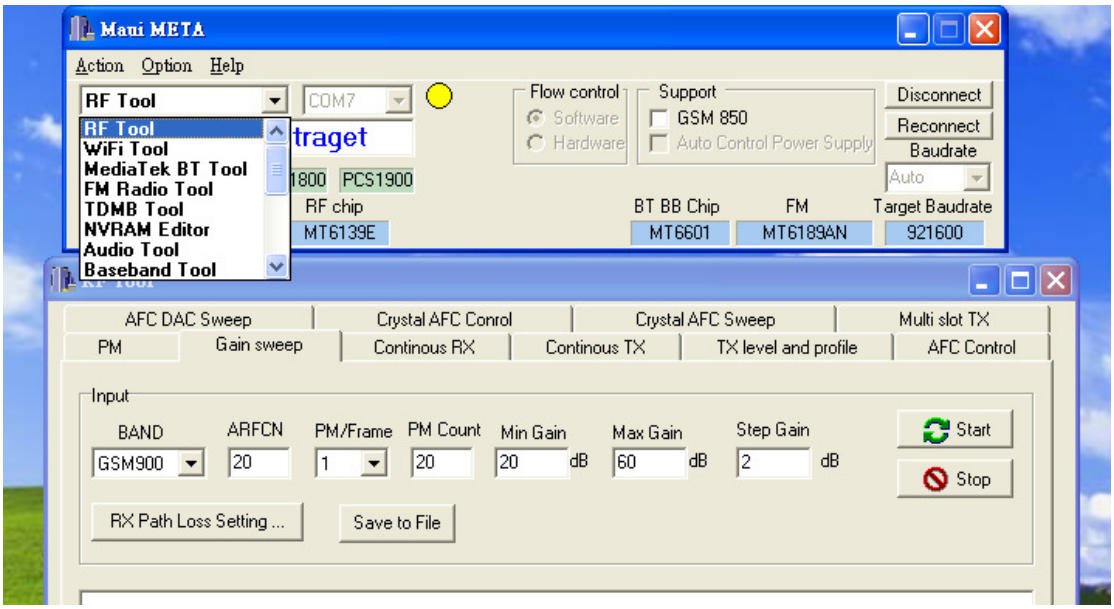
(2) Pull in UART cable

(3) Inset RF-Cable (AG8960)

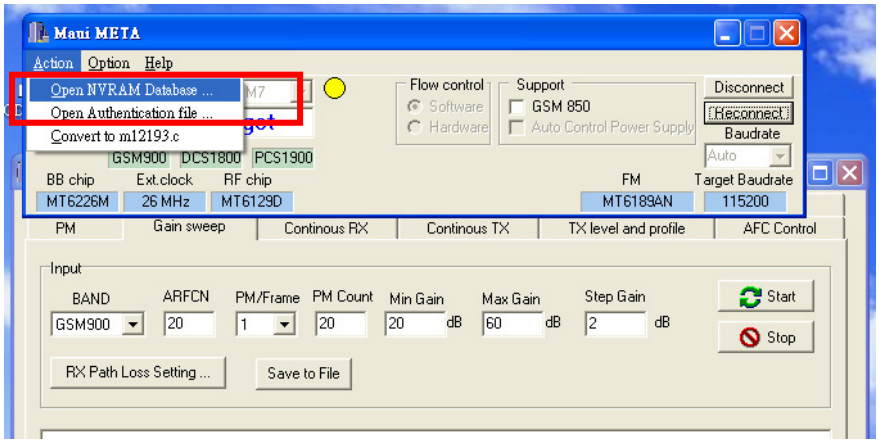
(4) Select proper com port and press "Reconnect"

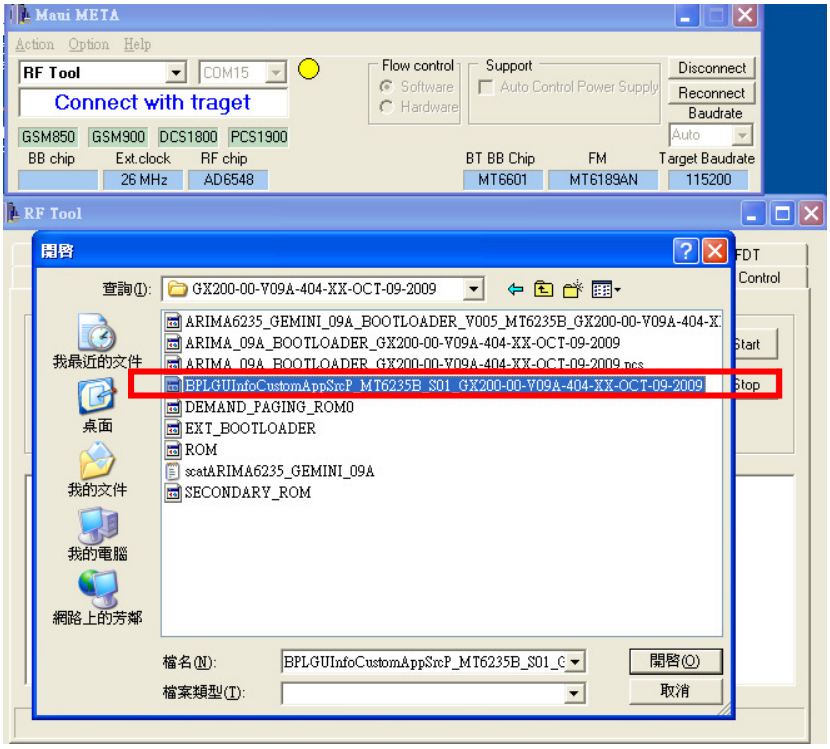


(5)Press handset's power key and it will show LG logo. Than appear the following picture. Select RF Tool.

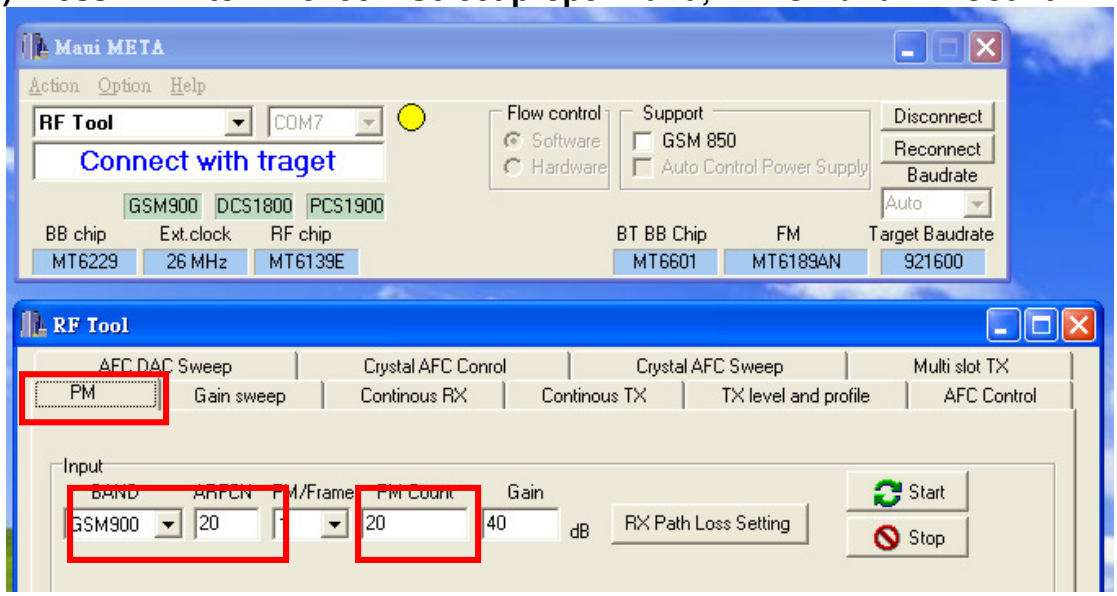


(6)Loading database Make sure the same to handset.



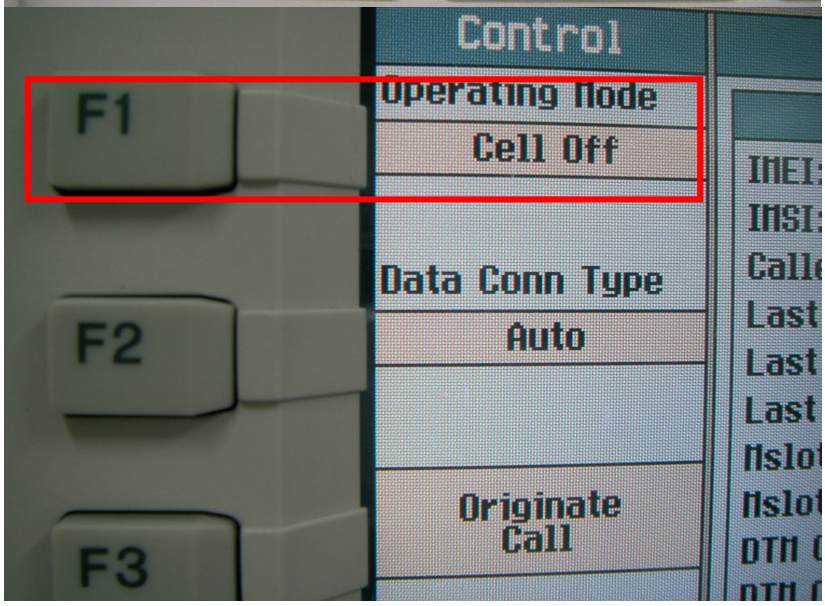


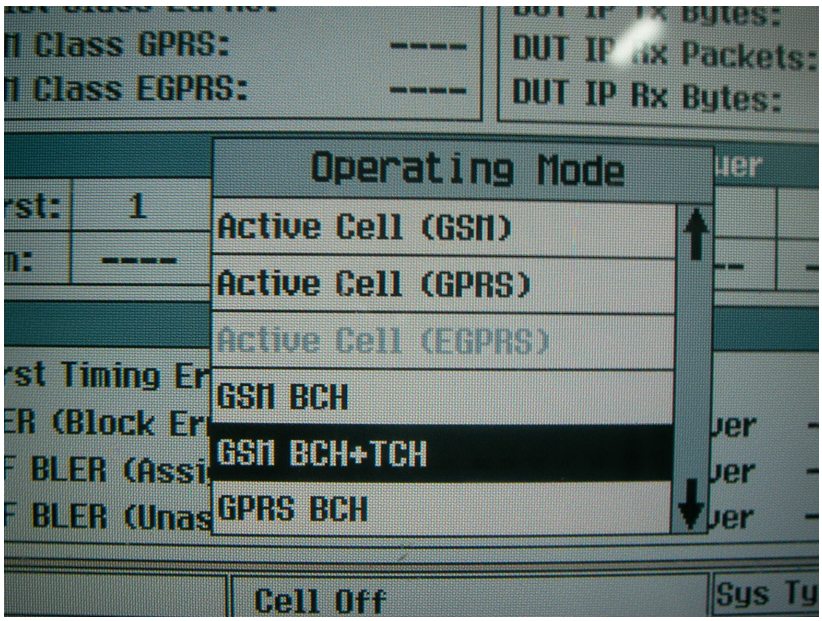
(7) Press “PM” to RX check. Select proper Band, ARFCN and PM Count.



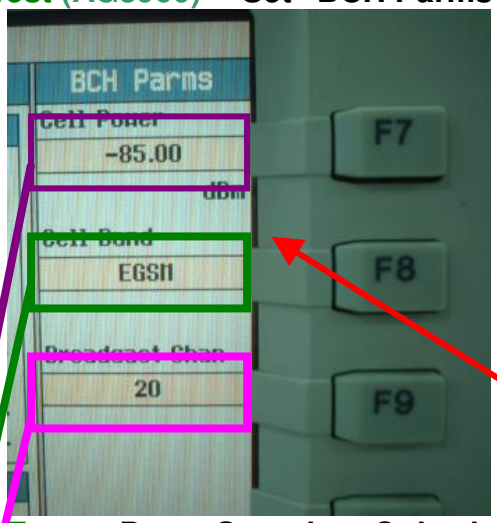
(8) Setup AG8960: Press CALL SETUP, Than press “F1”,and select “GSM BCH+TCH”.


MEASUREMENT
MEASUREMENT RESET
Stop
CALL SETUP
START SINGLE
Reference set
SYSTEM CONFIG
CONTINUOUS ALL

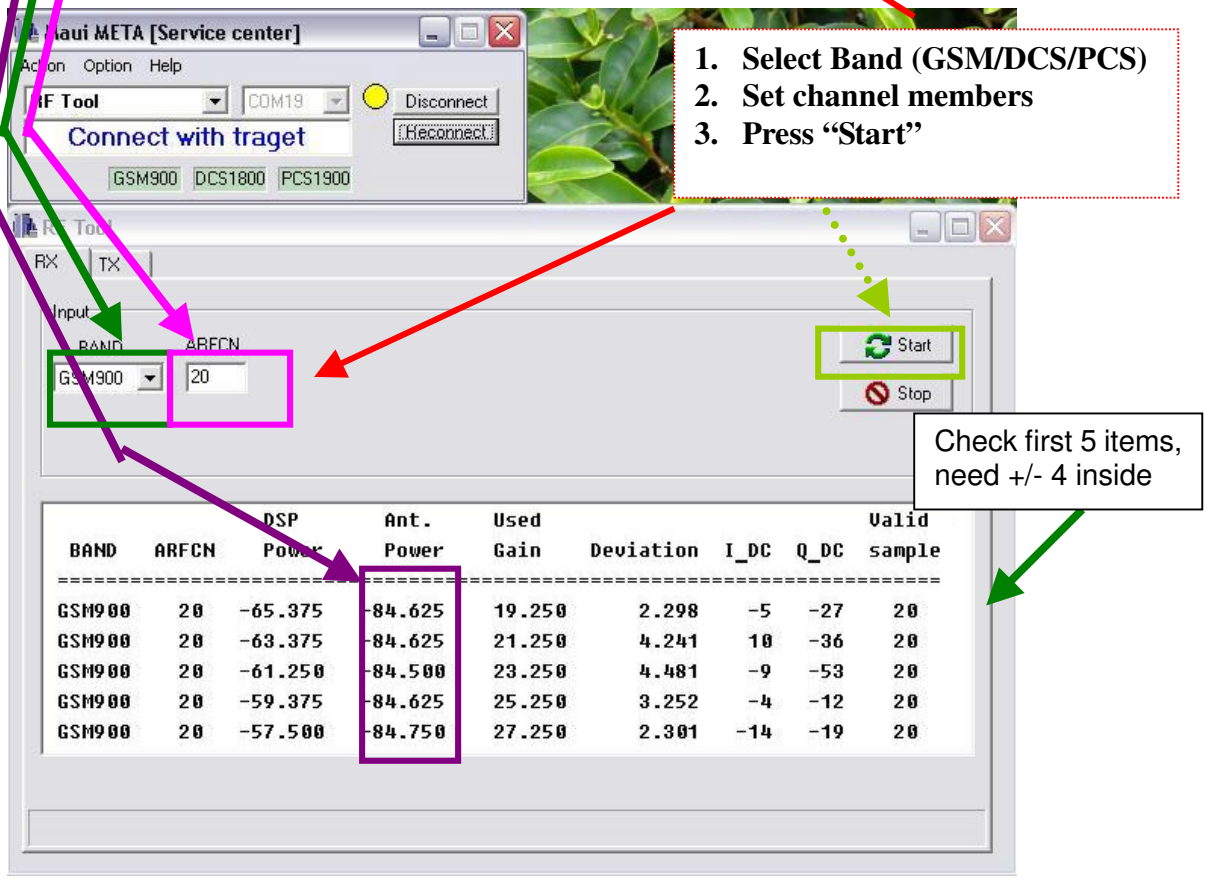

Control
F1
Operating Mode
Cell Off
Data Conn Type
F2
Auto
Originate Call
F3


Class GPRS: ----
Class EGPRS: ----
DUT IP Rx Packets:
DUT IP Rx Bytes:
Operating Mode
Active Cell (GSM)
Active Cell (GPRS)
Active Cell (EGPRS)
GSM BCH
GSM BCH+TCH
GPRS BCH
Cell Off

(9) RX Test (AG8960)--- Set "BCH Parms" ,



(10) RX Test --- Press Start then Only check top 5 items



1. **Select Band (GSM/DCS/PCS)**
2. **Set channel members**
3. **Press "Start"**

Check first 5 items, need +/- 4 inside

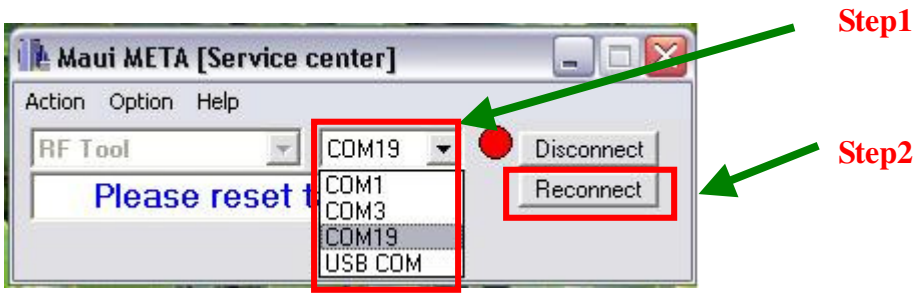
12.4 RF TX Check :

(1) Open " Meta_RF_Tool ".

(2) Pull in UART cable.

(3) Inset RF-Cable (AG8960).

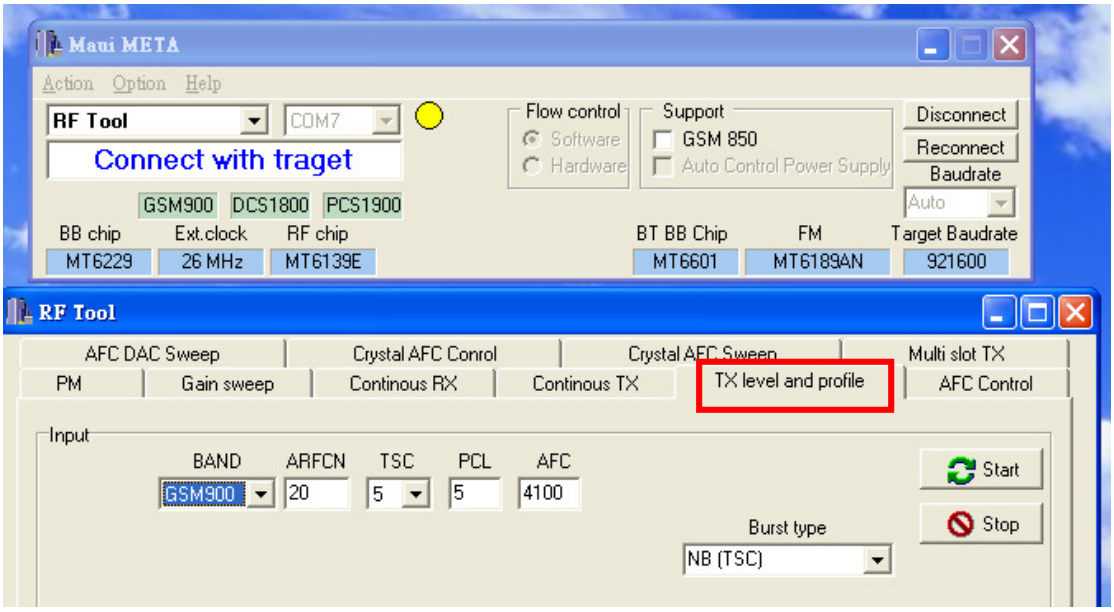
(4) Select proper com port and press "Reconnect" and then press handset's power key.



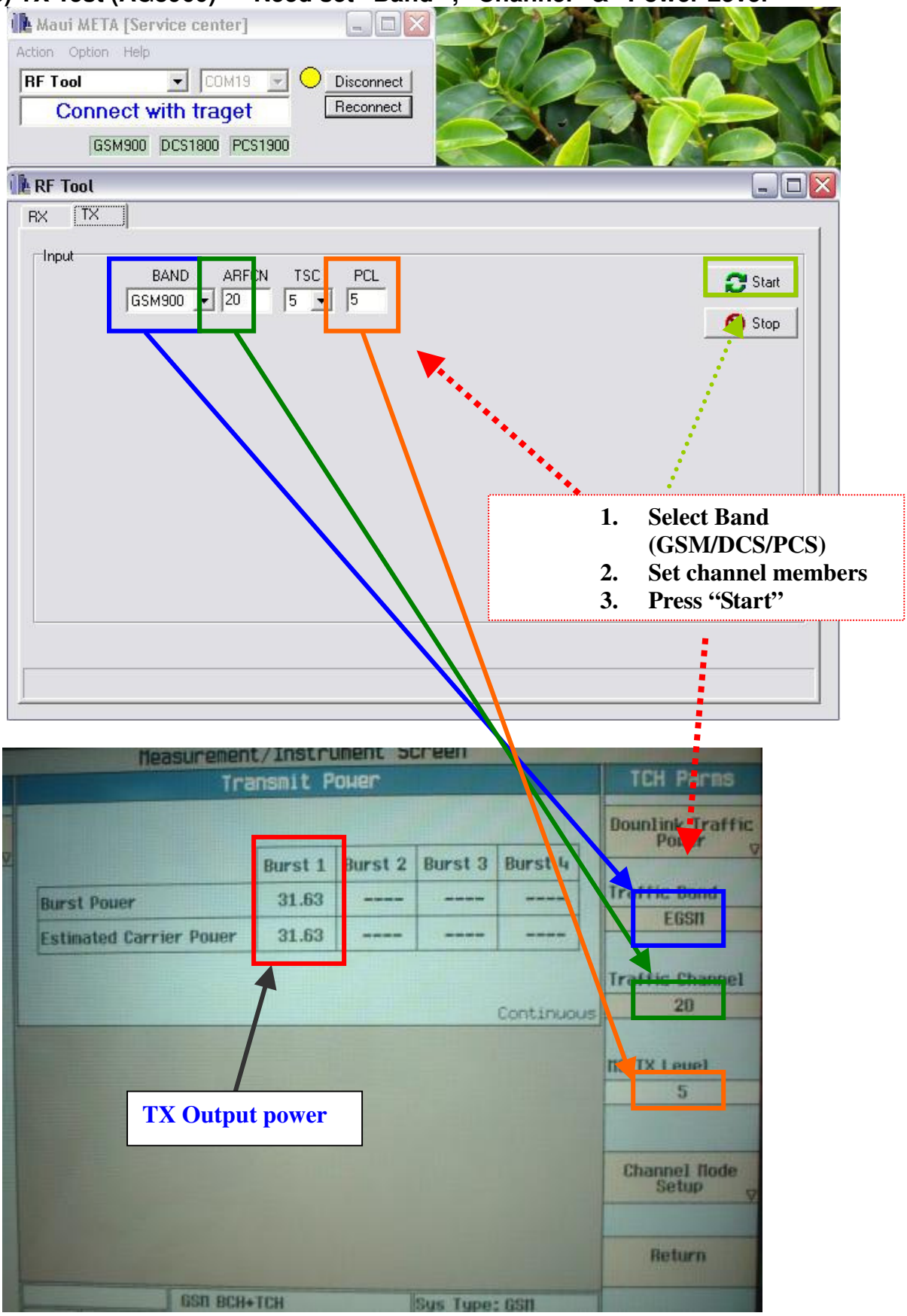
(5) Loading database Make sure the same to handset.

(6) AG8960 need to set TCH Parms.

(7)Press "TX level and profile" to TX Test.



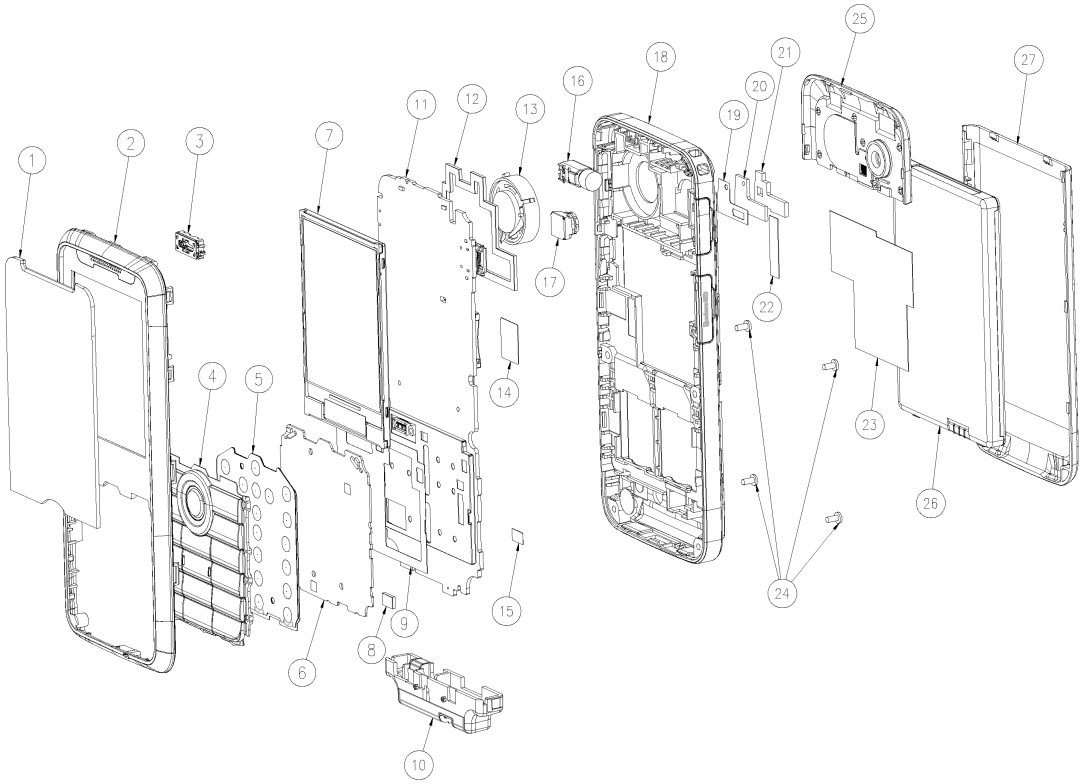
(8) TX Test (AG8960) --- Need set “Band” , “Channel” & “Power Level”



13. EXPLODED VIEW&REPLACEMENT PART LIST

13.1 Exploded view

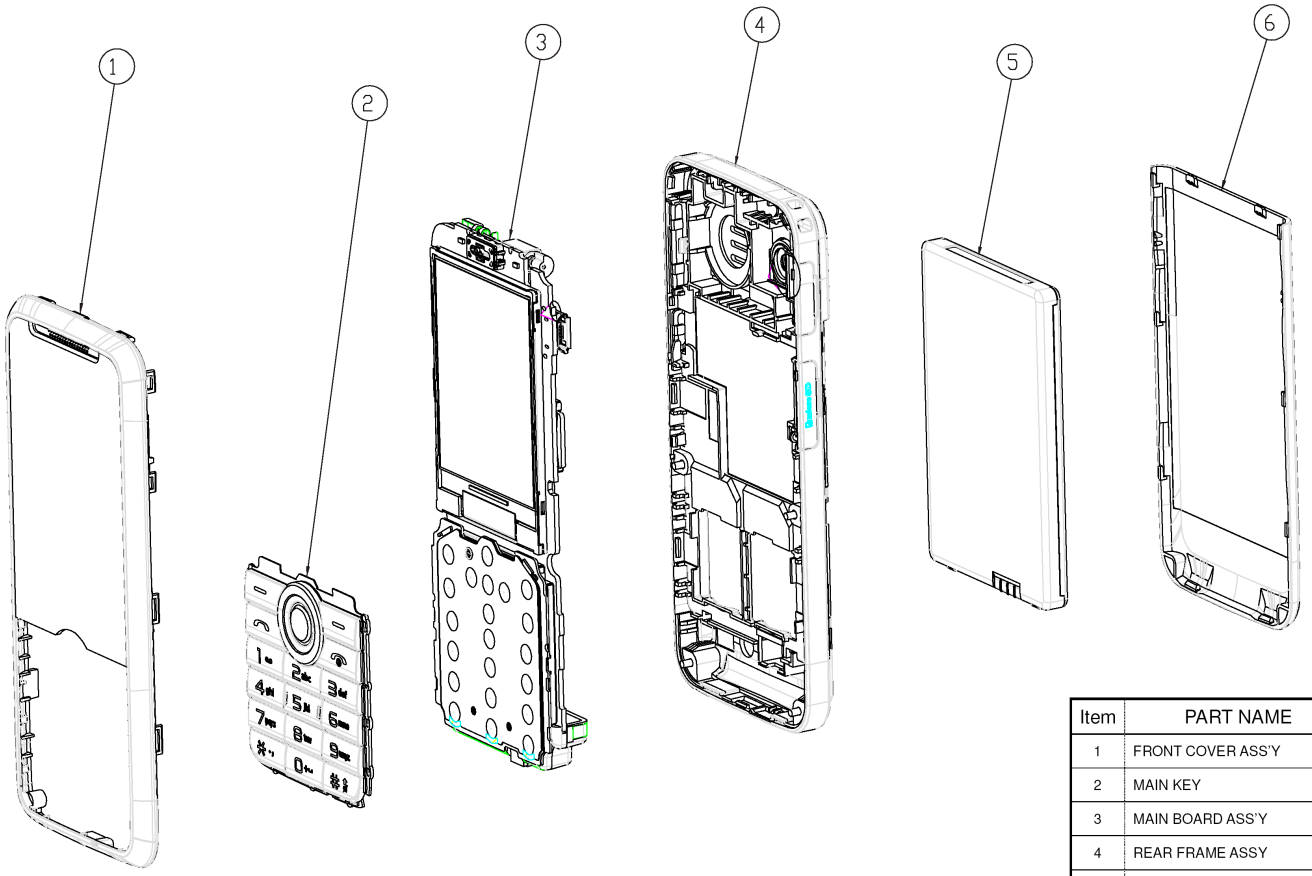
GX200 Explode Drawing



Item	PART NAME	Q'ty	Arima PN	LG PN
1	MAIN LENS	1	403-72620-0002	MWAC0135101
2	FRONT CABINET	1	401-72620-0002	MCJK0120901
3	RECEIVER	1	313-0000-00156	SURY0015101 (Front 에 구성)
4	MAIN KEY	1	404-72620-0004	AKAC0006902
5	METAL DOME	1	415-72620-0005	ADCA0109001
6	KEYPAD BOARD ASS'Y	1	8-72620-00-0002	SAEE0037401
7	LCD	1	327-0000-00089	SVLM0039801
8	MIC MESH	1	415-72620-0010	MFBZ0009901
9	KEY BOARD CONDUCTIVE ADHESIVE	1	415-72620-0009	MTAZ0276101
10	ANTENNA	1	330-0000-00184	SNGF0058801 (Rear 에 구성)
11	MAIN BOARD ASS'Y	1	8-7262-00-0001	SAFF0274101
12	SPEAKER CHAMBER SPONGE	1	415-72620-0008	MPBZ0266101
13	LOUD SPEAKER	1	313-0000-00142	SUSY0029601 (Rear 에 구성)
14	SHEET FOR LCM FPC CONNECTOR	1	415-72130-0003	MTAZ0281301
15	WATER DISSOLVE LABEL	1	478-221100-003	MLAB0006001
16	VIBRATOR	1	320-0000-00053	SJMY0010501
17	CAMERA	1	335-0000-00081	SVCY0026801
18	REAR CABINET	1	402-72620-0002	MCJN0115901
19	ADHESIVE FOR FLASH LED	1	415-72620-0006	MTAZ0281501
20	FLASH FPC ASS'Y	1	8-72620-00-0003	SADY0010501
21	FLASH LED SPONGE	1	415-72620-0003	MPBZ0266401
22	REAR FRAME MYLAR FOR CONNECTOR	1	415-72620-0007	MTAZ0281701
23	REAR FRAME MYLAR FOR SHIELD	1	415-72620-0025	MTAZ0282001
24	SCREW	4	409-00000-0046	GMZZ0027301
25	CAMERA COVER ASS'Y	1	405-72620-0005	MDAY0057001
26	BATTERY	1	306-0000-00098	SBPP0027401
27	BATTERY COVER ASS'Y	1	405-72620-0006	MCJA0105501

Ass'y exploded view

GX200 Assemble Drawing



Item	PART NAME	Q'ty	Arima PN	LG PN
1	FRONT COVER ASS'Y	1	8M-726200-0005	ACGK0153001
2	MAIN KEY	1	404-72620-0004	AKAC0006902
3	MAIN BOARD ASS'Y	1	8M08-7262-N002	SAFF0274101
4	REAR FRAME ASSY	1	8M-726200-0007	ACGM0151501
5	BATTERY	1	306-0000-00098	SBPP0027401
6	BATTERY COVER ASS'Y	1	405-72620-0006	MCJA01505501

13. Replacement Part list

Level	Part number	Arina part number	LG part number	Description	Qty
. 1	Adapter	331-0000-00123	SSAD0031501	Travel Charger_150~240V_5.10V_700mA_CE;CB_STA-U12ID_EN50075_ALPHA_DongDo_N/A	1
. 1	Headset	333-0000-00078	SGEY0003745	Headset Stereo Channel Type_EMB-LGE004MSKJ_16 Ohm_Mic.S/N'58 'dB_- 38 'dB_PT.CRESYN_Micro USB 5PIN	1
. 1	Battery	306-0000-00098	SBPP0027401	Lithium-Polymer Batt. Packing_3.7V_1500mAh_GRAY_LGIP-400N_WISEPOWER_Bar code:SBPP0027401	1
. 1	Data Cable	410-7325000001	SGDY0014301	Data Cable_7325_JESS-LINK_USB 4P to MICRO USB 5P,L=1250 mm	1
. 1	HANDSET LABEL	478-726200-001	MLAA0069801	HANDSET LABEL_Packing Label_7262_Global_WHITE POLYESTER LABEL_N/A_E-LIN(KUNSHAN)	1
.. 2	MAIN KEY	404-72620-0004	AKAC0006902	Key_7262_BLACK_PC+Rubber_Painting_HINDI_MAIN KEY_MISUNG POLYTECH CO._N/A	1
.. 2	Screw	409-00000-0046	GMZZ0027301	Machine Screw_Flat_Cross(JCIS)_1.4mm_3.0mm_BLACK_Steel_Plating Zinc_H.N.M_NYLOK	4
... 3	LOUD SPEAKER	313-0000-00142	SUSY0029601	LOUD SPEAKER_YD-17I-02_Φ 17.0 mm_8 Ohm_94.0dB_CHANG ZHOU YU CHENG_±3dB,H=5.1mm,Spring contact	1
... 3	Vibrator	320-0000-00053	SJMY0010501	Vibrator Bar Type_Y0408A-400350302-0021a_R2.25+4.40*4.60*13.00mm_LNLON_Spring contact type	1
. 1	BATTERY COVER ASS'Y	405-72620-0006	MCJA0105501	Cover_7262_GRAY_PC_Painting_BATTERY COVER ASS'Y_GABEUL_N/A	1
.. 2	Rear Cover Ass'y	8M-726200-0007	ACGM0151501	Rear Cover Sub- Ass'y_7262_BLACK_REAR FRAME SUB ASM FOR BR	1
... 3	Rear Cabinet	402-72620-0002	MCJN0115901	Rear Cabinet_7262_BLACK_PC_Painting_REAR FRAME Ass'y_GABEUL_N/A	1
.... 4	Flash FPC Ass'y	8-7262-00-0003	SADY0010501	Flash FPC Ass'y_7262_NATURAL_N/A	1
..... 6	LED1	309-0000-00154	EDLH0015301	LED Flash type_EHP-C04/NT01H-P01/TR_WHITE_2pin_SMD2_500mA/<70lm_EVERLIGHT_size2.04*1.64*0.7mm	1
.... 4	Flash LED Sponge	415-72620-0003	MPBZ0266401	GASKET_7262_BLACK_PORON_N/A_Flash LED Sponge_GUAN YI(WUJIANG)_N/A	1
.... 4	ADHESIVE for Flash LED	415-72620-0006	MTAZ0281501	ADHESIVE_7262_TRANSPARENT_ADHESIVE_N/A_FLASH LED TAPE_GUAN YI(WUJIANG)_N/A	1
... 3	CAMERA COVER Ass'y	405-72620-0005	MDAY0057001	Cover_7262_GRAY_PC_Painting_CAMERA COVER Ass'y_GABEUL_N/A	1
.. 2	REAR FRAME MYLAR FOR CONNECTOR	415-72620-0007	MTAZ0281701	SHEET_7262_BLACK_PET_N/A_REAR FRAME MYLAR_GUAN YI(WUJIANG)_FOR CONNECTOR	1
... 3	Main Board Ass'y	8-7262-00-0001	SAFF0274101	Main Board Ass'y_7262_NATURAL_FOR 7262 Main BOARD ASS'Y	1
..... 5	X201	305-0000-00092	EXSY0025201	Crystal Oscillator_TZ1387A_26.0 MHZ_±10.0ppm_SMD-3.2*2.5mm-4Pin_TAI-SAW_N/A	1
..... 5	X301	305-0000-00068	EXSY0024901	Crystal Oscillator_TZ0375A_32.0 MHZ_±10.0ppm_SMD-3.2*2.5mm-4Pin_TAI-SAW_CL = 12pF	1
..... 5	X401	305-0000-00026	EXSY0024801	Crystal Oscillator_Q13MC1461000200_32.768KHZ_±20ppm_SMD-7*1.5mm-4Pin_EPSON TOYOCOM_MC-146 type	1
..... 5	F1101	308-0000-00169	EFBY0000501	SMD THIN FILM FUSE_1.250 (1 ?) A / 32 V_KAB3202-132NA29010_0603_MATSUO_DCR < 95 mOHM	1
..... 5	D502,D1102	309-0000-00001	EDNY0013701	Diode Zener_BZX585-B5V6_N/A_2pin_SOD-523_5.6V/300mW_PHILIPS_± 2%	2
..... 5	D501	309-0000-00111	EDSY0018501	Diode Schottky_SDM20U40-7-F_N/A_2pin_SOD-523_250mA/40V_DIODES_N/A	1
..... 5	LED1308	309-0000-00081	EDLH0015401	LED Single Color_LTST-C193KRKT-5A_RED_2pin_0603_5mA/45mcd_LITEON_N/A	1
..... 5	LED1307	309-0000-00021	EDLH0015001	LED Single Color_LTST-C193TBKT-5A_BLUE_2pin_0603_5mA/18~28mcd_LITEON_Luminous Bin Code=M1/M2	1
..... 5	U101	311-0000-00483	EUSY0414001	I.C POWER AMP MODULE(RF)_sky77531_MCM_30 PIN_NoMemory_SKYWORKS_TX-RX FEM for Quad Band GSM/GPRS	1
..... 5	U202	311-0000-00770	EUSY0414101	I.C LDO_XC6221A282GRN_USP_4pin_NoMemory_TOREX_Vo=2.8V,250mA	1
..... 5	U201	311-0000-00740	EUSY0399701	I.C TRANSCEIVER_AD6548BCPZ_LFCSP_32 PINS_NoMemory_MTK_N/A	1
..... 5	U301	311-0000-00503	EUSY0361701	I.C BLUETOOTH MODULE_MT6601T/BO-L_TFBGA_70BALLS_NoMemory_MTK_N/A	1
..... 5	U401	311-0000-00860	EUSY0414201	I.C BASEBAND PROCESSOR_MT6235BA/A_TFBGA_362 Balls_NoMemory_MTK_N/A	1
..... 5	U601	311-0000-00865	EUSY0414401	I.C STACKED MEMORY_K5D1G572CM-D075_FBGA_107 BALLS_256M+1.0G_SAMSUNG_NAND Flash+Mobile SDRAM	1
..... 5	U701	311-0000-00466	EUSY0414601	I.C AUDIO POWER AMPLIFIER_YDA145-PZ_WLCSP_9Balls_NoMemory_YAMAHA_PWM O/P=8 Ohm,0.75W/3.6V	1
..... 5	U801	311-0000-00868	EUSY0414701	I.C CHARGE_bq24350DSGR_SON_8 Pins_NoMemory_TI_N/A	1
..... 5	U901	311-0000-00759	EUSY0394801	I.C DC-DC CONVERT_AAT3193IJQ-1-T1_SC70_10PINS_NoMemory_AAT_Charge Pump LED Driver	1
..... 5	U1001	311-0000-00866	EUSY0414801	I.C DC-DC CONVERT_AAT3176IDH-T1_TDFN_10 PINS_NoMemory_AAT_LED Flash Driver	1
..... 5	U1101	311-0000-00869	EUSY0414901	I.C ANALOG SWITCH_ISL54217IRUZ-T_TQFN_12 PINS_NoMemory_INTERSIL_DUAL SP3T SWITCH	1
..... 5	U1102,U1103	311-0000-00159	EUSY0408501	I.C ANALOG SWITCH_NC7SB3157P6X-NL_SC70_6 PIN_NoMemory_FAIRCHILD_SPDT	2
..... 5	U1302	311-0000-00762	EUSY0394901	I.C FM MODULE_Si4708-B-GMR_QFN_16 PINS_NoMemory_SILICON LABS_N/A	1
..... 5	U1401	310-0000-00073	EQBA0005301	NPN Epitaxial Planar Transistor -Dual_BC847S_6pin_SOT-363_INFINEON_N/A	1

..... 5	MIC701	312-0000-00050	SUMY0013001	Omni-MIC._SPU0410LR5H?QB_62 'dB_ - 38dB_± 3.0dB_3.76*2.95*1.10mm_NA_SMD Type_KNOWLES_3.76*3*1.10mm	1
..... 5	RFJ101	314-0000-00016	ENWY0006901	CON. ANTENNA CONNECTOR_C90-101-0004_NA_6 pin_SPEED TECH CORP(BEIJING)_For Antenna Switch	1
..... 5	J101,J102	314-0000-00434	ENRY0010601	CON. SPRING CONNECTOR_PJSCG-0A-1000S_NA_1 pin_PROCONN_T=2.2 mm	2
..... 5	J801	314-0000-00441	ENZY0028301	CON. BATTERY CONNECTOR_BTM14-A4-R0020_2.500 mm_3 pin_ACRON_H=5.7mm	1
..... 5	J802,J804	314-0000-00449	ENSY0025501	CON. SIM CARD CONNECTOR_SPNN06-D0-6100S_2.540 mm_6 pin_PROCONN_H=1.65 mm	2
..... 5	J901	314-0000-00422	ENQY0015601	CON. FPC CONNECTOR_04-6293-625-005-829+_0.300 mm_25 pin_KYOCERA ELCO_H=0.85mm	1
..... 5	J1001	314-0000-00442	ENZY0028401	CON. PIN STICK (POGO) CONTACT_66578-A4-132601_2.540 mm_2 pin_ACRON_H=5.55mm	1
..... 5	J1002	314-0000-00415	ENSY0023901	CON. CAMERA MODULE SOCKET CONNECTOR_CMS020-B0-0201_0.650 mm_20 pin_PROCONN_W/H Cap, For 6*6 Camera module	1
..... 5	J1101	314-0000-00430	ELCH0018201	CON. MICRO USB CONNECTOR_GU073-5P-SD-E1500_0.650 mm_5 pin_LS MTRON_H=3mm	1
..... 5	J1201	314-0000-00256	ENWY0006601	CON. MICRO SD CONNECTOR_502774-0891_1.100 mm_8 pin_MOLEX_H=1.8mm	1
..... 5	J1401	314-0000-00363	ENBY0049801	CON. PCB FEMALE CONNECTOR_DF40C-20DS-0.4V(51)_0.400 mm_20 pin_HIROSE_H=1.45mm	1
..... 5	SW1-SW3	315-0000-00047	ESCY0007001	Switch Tact_LS12K2H-T_12V/20 mA_2 Pin_TACT_CITIZEN ELECTRONIC_Side tact	3
..... 5	Z201	326-0000-00150	SFSY0041601	Filter SAW_B39941B9504L310_912±30.5MMZ_EPCOS_FOR GSM RX,50/150 OHM-SMD10PIN	1
..... 5	Z202	326-0000-00171	SFSY0041701	Filter SAW_B39202B9502L310_1960.0±30MHZ/1842.5±37.5MHZ_EPCOS_GSM RX,50/150Ohm,SMT10 PIN	1
..... 5	FL1101	326-0000-00039	SFDY0002401	Filter Dual Mode_EXC24CP121U_100MHz_PANASONIC_Noise,4pin-0504,120Ohm,I=500mA	1
..... 5	FL1102	326-0000-00172	SFEY0017001	Filter EMI_MCM1012B900FBP_100MHz_INPAQ_0504	1
..... 5	FL301	326-0000-00131	SEVY0009501	Filter Bandpass_BF1608-L2R4DAAT/LF_2400MHz_ACX_Lose < 1.7dB-SMD 0603	1
..... 5	BB shielding case	415-72620-0001	ACKA0027901	CASE_7262_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_BB shielding case_SPEED(KUNSHAN)_N/A	1
..... 5	RF shielding case	415-72620-0002	ACKA0028001	CASE_7262_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_RF shielding case_SPEED(KUNSHAN)_N/A	1
..... 5	I/O connector shielding case	415-72620-0023	ACKA0028101	CASE_7262_SILVER_COPPER-NICKEL-ZINC ALLOY_N/A_I/O connector shielding case_SPEED(KUNSHAN)_N/A	1
... 3	LCD	327-0000-00089	SVLM0039801	LCD TFT_Transmissive_176x220 Pixels_2.00 inch_DM20-CSM01_LG INNOTEK_262K Color,FPC type	1
... 3	SHEET for LCM FPC connector	415-72130-0003	MTAZ0281301	SHEET_7213_YELLOW_KAPTON_N/A_Kapton For LCM FPC conn_GUAN YI(WUJIANG)_N/A	1
... 3	Camera	335-0000-00081	SVCY0026801	CAMERA MODULE CMOS_AR16F338_SXGA_ABILITY_1.3M Pixels, Socket type	1
... 3	SPEAKER CHAMBER SPONGE	415-72620-0008	MPBZ0266101	GASKET_7262_BLACK_PORON_N/A_SPEAKER CHAMBER SPONGE_GUAN YI(WUJIANG)_N/A	1
... 3	WATER DISSOLVE LABEL	478-221100-003	MLAB0006001	Mech. Label_2211_Global_WATER DISSOLVE LABEL_ROUND DOT TYPE 3*5mm_E-LIN(KUNSHAN)	1
... 3	KEY BOARD CONDUCTIVE ADHESIVE	415-72620-0009	MTAZ0276101	ADHESIVE_7262_SILVER_ALUMINUM_N/A_KEY BOARD CONDUCTIVE ADHESIVE_GUAN YI(WUJIANG)_N/A	1
... 3	Antenna	330-0000-00184	SNGF0058801	ANTENNA EMBEDDED_7262_QUAD BAND(GSM/DCS/PCS/BLUETOOTH)_BLACK_NC034IA86_SKYCROSS_Carrier + FPC Type	1
... 3	MIC MESH	415-72620-0010	MFBZ0009901	FILTER_7262_BLACK_FELT MESH_N/A_MIC MESH_GUAN YI(WUJIANG)_SPONGE	1
.. 2	REAR FRAME MYLAR FOR SHIELD	415-72620-0025	MTAZ0282001	SHEET_7262_BLACK_PET_N/A_REAR FRAME MYLAR_E-LIN(KUNSHAN)_FOR SHIELD	1
... 4	Keypad Board Ass'y	8-7262-00-0002	SAEE0037401	Keypad Board Ass'y_7262_NATURAL_N/A	1
..... 6	KR101,KR102	301-0081-12152	ERHY0035201	Chip resistor_150 Ohm_± 1%_1/16 W_0402_TA-I	2
..... 6	KD101,KD102	309-0000-00132	EDLH0015501	LED Single Color_LTW-010GCG5_WHITE_2pin_SMD2_5mA/500mcd_LITEON_SIDE VIEW	2
..... 6	KJ101	314-0000-00194	ENBY0057801	CON. PCB MALE CONNECTOR_DF40C-20DP-0.4V(51)_0.400 mm_20 pin_HIROSE_N/A	1
.... 4	Metal Dome	415-72620-0005	ADCA0109001	DOME_7262_SILVER_PLASTIC+METAL_N/A_Metal Dome_PRINTEC_LGF	1
.. 2	Front Cover Ass'y	8M-726200-0005	ACGK0153001	Front Cover Sub-Ass'y_7262_GRAY_FRONT COVER SUB ASM FOR BR	1
... 3	Front Cabinet	401-72620-0002	MCJK0120901	Front Cabinet_7262_GRAY_PC_Painting_FRONT COVER Ass'y_GABEUL_N/A	1
... 3	Main Lens	403-72620-0002	MWAC0135101	Lens_7262_BLACK_PMMA+PC_N/A_MAIN LENS_DAEJIN_N/A	1
... 3	RECEIVER	313-0000-00156	SURY0015101)	RECEIVER_2403 260 00041_10.0 * 4.8 mm_32 Ohm_85.0dB_PHILIPS_± 2 dB,H=2mm,spring contact	1